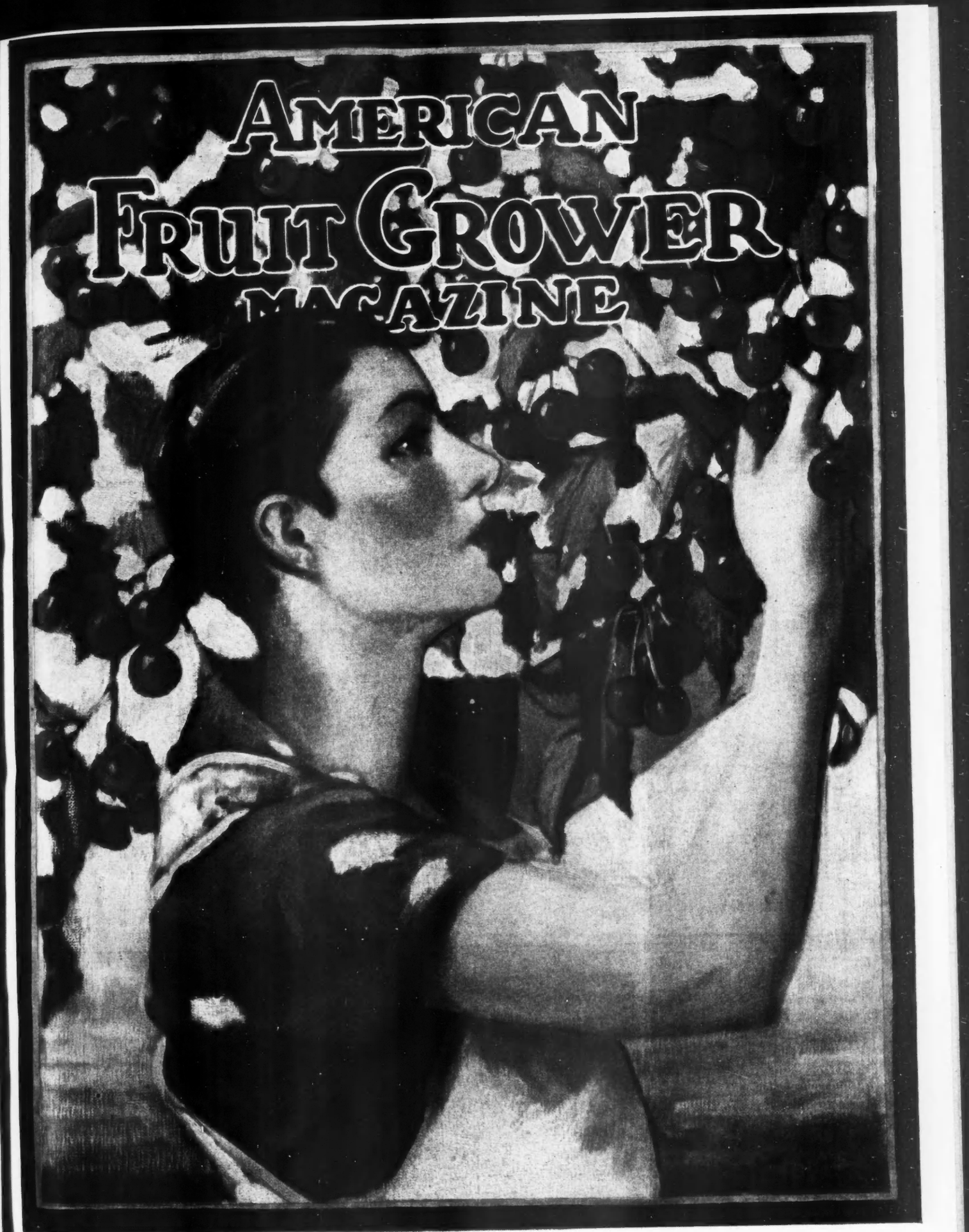

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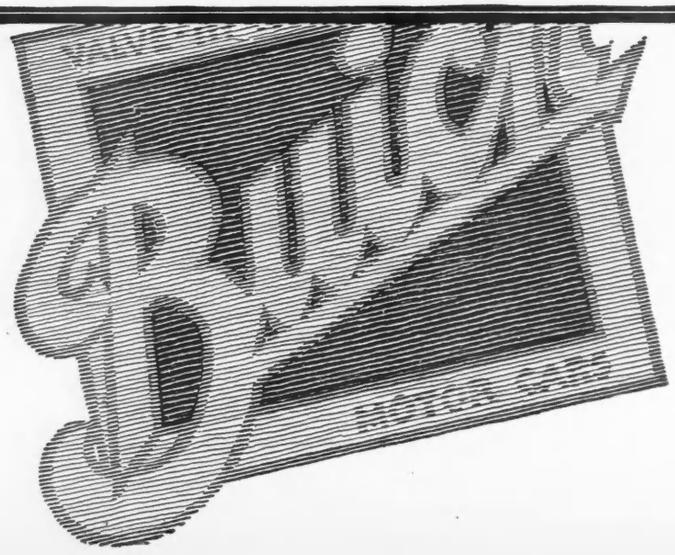

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June Budding

By M. J. Heppner

Division of Pomology, University of California

JUNE budding, as the term might imply, does not necessarily mean budding that is done during the month of June, although this is the conception many fruit growers have. Instead, it refers to budding usually done during the early summer, the bud growing the same season. In other words, the process of budding completed, growth commences soon after.

Advantages and Disadvantages of June Budding

Observations have shown that June budded trees generally develop into more satisfactory trees than those produced in the usual manner of late summer budding. This can be accounted for by the following:

1. Only inherently strong seedlings have vigor enough to force a bud to grow into a satisfactory tree during the same season that the seed is planted. It is obvious, therefore, that the weaklings will thus be automatically eliminated.

2. The shock of transplanting a tree with a one-year root is very much less than in the usual two-year root. In fact, most of the roots on a June budded tree come intact with the tree when it is dug from the nursery. On the other hand, a large proportion of the roots is lost when two-year-old roots are used.

3. The tree is not overgrown and the buds are so fresh and full of vigor that leaves and branches readily push out all up and down the young trunk. This makes possible the formation of the head where it is wanted and insures against sunburn and borers, which generally follow a case of sunburn. One of the principal gains in using a good June budded tree is the better framework that it is possible to establish.

On the other hand there are some

After the buds have set the strings should be cut and the top of the seedling should be broken over about four inches above the bud

disadvantages of this type of propagation, two of which are of significance:

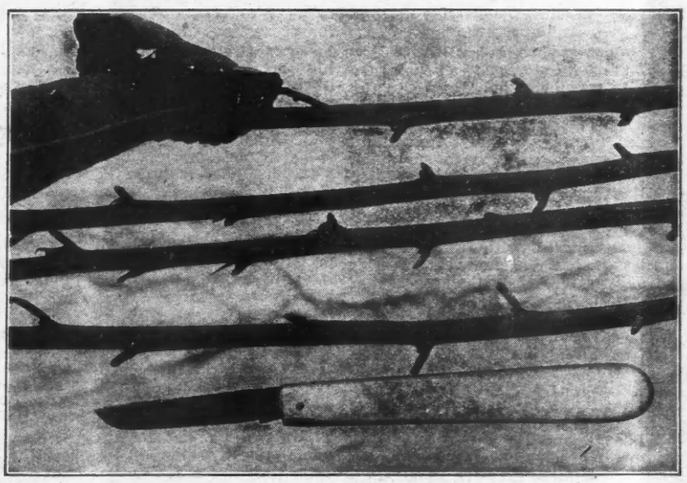
1. The high cost of producing large size trees. This is naturally reflected in the price that the orchardist must pay for his trees in view of the increased cost of production to the nurserymen.

2. June budded trees will not stand as much abuse between digging from the nursery and becoming established in the orchard. Apparently not as much plant food is stored in the roots and trunk, and their smaller size makes them more susceptible to drying out unless carefully handled.

The Peach Gives Best Results

Although success may be had when employing June budding on all deciduous fruit trees, best results are obtained with the peach, both as to the top and as to the root. As the peach seedling makes a rapid growth, the tree generally attains a size which is of sufficient magnitude to allow budding to be done in May, June or July, depending upon the locality. June budding may be practiced in some sections in late May, while it may be impossible in others until late June.

Differences in soil and climate cause these variations. The almond root probably lends itself to this type of budding nearly as well as the peach root. During the past season the writer had good success in producing large-sized apricot, peach, plum and almond trees on the almond root. Only little success was had when the Myrobalan plum and apricot roots were used.



Under good growing conditions it is possible to secure buds for June budding from wood that grew the current season. When the leaves are removed a small portion of the petiole should be left attached

Requisites for June Budding

There are three requisites for June budding:

1. The seedlings must be large enough early in the season to be budded conveniently.

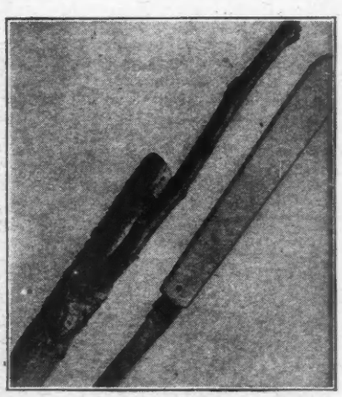
2. The bark must slip readily.

3. The desired dormant buds must be available. In some cases they must be placed in cold storage during the previous winter and kept under these conditions until ready for use. In California, however, most of the deciduous fruit trees develop their buds sufficiently by late May or early June so that this procedure is not found necessary. Buds are thus used that were formed during the same season. When it is desired to hurry bud formation to completion, ringing of the branches is sometimes resorted to.

We will now devote our attention to the propagation of June budded trees from the seed to the mature tree. The first requisites for successful June budding are that the nursery soil be of a good type, and that water may be applied easily and frequently. A loamy soil with good drainage is preferable. All precautions must be taken to see that the growth of the young trees will not be hindered in the least. The spot selected for the nursery should be of good exposure and free from low pockets. Sunshine and proper amounts of water go hand in hand in making a good sized seedling in the quickest possible time.

Stratifying the Seeds

Before the pits are planted in the nursery row they are usually stratified. As a rule, pits are obtained from dry yards or canneries where the proper varieties are handled. Whenever possible, the pits should be taken from bigger trees, this, of course, being practical only when a few seeds are desired. One must take caution not to allow the seeds to dry out and thus prevent germination. This is best done by placing about four inches of sand in the bottom of a box about 18 inches square and then spreading the pits over the sand. The pits should be covered with another



This picture shows the proper place to cut back a seedling above the bud

layer of sand and the entire contents kept damp, but not wet. When using large amounts of seeds, as is done by most commercial nurserymen, pits are often dug in the ground and the seeds buried until time for planting. In cases where the boxes are used, it is a good policy to keep them under the

(Continued on page 13)

Editorial Contents

DEPARTMENTS

Small Fruit Culture in California

By A. H. Hendrickson
California Deciduous Fruit Station

THE PRODUCTION and marketing of small fruits in California presents many interesting problems which differ from those of most other berry growing districts. Long growing seasons, equable temperatures in regions where most of the berries are grown, and mild winters, form a combination of climatic factors which enable the grower to secure many crops from a plantation before it is necessary to set out a new planting. Accurate control of soil moisture by irrigation makes it possible to lengthen the harvesting season and to mature all the fruit without loss from drought or warm weather. Tender varieties producing fruit of delicate flavor grow luxuriantly, in some cases retaining the leaves throughout the year.

The small fruit industry of California is concentrated in certain well-defined areas, and the growers usually specialize on one or two kinds of berries. This concentration arises partly from the necessity of having sufficient production to permit of carload shipments from a common shipping point and is also due to the usual grouping of small fruit plantings in close proximity to large cities. The principal berry sections are found around Los Angeles, Watsonville, Sebastopol and in the region adjacent to San Francisco Bay. Other smaller berry growing centers are found in many places throughout the state.

Strawberry Is Most Important

Among the small fruits, the strawberry is easily the most important. This fruit is found on the market almost continuously from late in March until November, with the peak of production in May and June. Local shipments are handled almost entirely by automobile truck. One large strawberry producer near the coast sends fruit to the cities in the warm interior valleys by refrigerator truck, on which is mounted a small gasoline engine operating a fan which circulates the air through ice bunkers and then over the fruit. The usual container is a wooden chest holding 20 slides of six baskets each. These chests, which are of heavy construction, are returned to the grower.

Strawberries are practically all grown under irrigation on raised beds about two feet wide. The plants are allowed to cover the entire bed in a heavy mat. Water is applied at frequent intervals in the narrow ditches between the beds. These ditches also serve as paths for the pickers to walk upon when not being used for irrigating. As is the case under eastern conditions, the best crop of berries is produced the second season. One large grower claims to have produced in a single season over 17 tons of strawberries from one acre, but the average production is much below this extraordinary yield. The third and fourth crops are profitable but considerably smaller than the one in the second year. Furthermore, it is not unusual to secure several good pickings from the plants the first year they are set out. The normal length of life of the plantation is three or four years. No winter mulching is necessary and the plants begin sending out new leaves late in February or early in March. The winter months are spent in weeding, taking out old plants, leveling beds and repairing irrigation flumes.

Strawberry Plants Grown by Experts

Curiously enough, strawberry growers do not use their own plants for setting out a new plantation. They prefer to secure their young plants from specialists who do nothing but grow strawberry plants. Many of the plants are grown in certain mountain valleys in the northern part of the state, where the soil and climate seem adapted for producing vigorous plants with strong root systems.

The principal varieties grown near the coast are the Banner, Marshall, Oregon, Nick Ohmer and Klondike. In the interior valley the Gold Dollar and the Jessie seem to be well adapted to the warm climate.

Blackberries and Dewberries Second in Importance

Blackberries, together with the dewberries and the dewberry hybrids, are probably second in importance to the strawberry. These brambles are found on the market in abundance during the months of July, August and September. In addition to supplying the local demand and shipments to inter-mountain states as well as markets further east, the production of blackberries is large enough to supply the canneries with fruit for jams and preserves. A few blackberries are dehydrated. Local shipments of the fresh fruit are made in the chests used for strawberries.

In the absence of injury by severe winter weather, the average length of life of a blackberry plantation is comparatively long. Plantings of blackberries and loganberries eight to 12 years of age are not unusual, and there is an authentic case known to the writer of a patch of Lawtons still bearing profitable crops in their eighteenth year.

Methods of Training Blackberries

The fruiting canes of blackberries are generally supported on stakes or trellises. Trailing varieties like Mammoth, Logan, Phenomenal and Cory are usually trained on a two-wire trellis. The lower wire is ordinarily two to three feet above the ground, and the upper wire about one and one-half feet above the first. Many different forms of training are used, one of the most common being a weaving of the canes in loose spirals around the two wires. Heavy growing varieties like the Himalaya and Macatawa are so trained that the weight of the canes rests upon two wires stretched between cross-bars fastened to the posts. The Lawton is trained to be either self-supporting, or is held up by a loop of wire fastened to a stake set at each hill. Ordinarily, from four to six or seven canes are left in each hill. With the trailing varieties, half of this number are trained in each direction on the trellis. The usual length of canes left at pruning time is from eight to 12 feet for the trailing sorts and about four feet for the upright growers. During the growing season the new canes are simply allowed to grow along the ground under the trellis. In the winter the old canes are cut off and burned and the new canes fastened to the wires.

Varieties of Blackberries

The most important varieties now being grown are:

Lawton, which is an upright grower ripening in mid-season. This variety is popular because of its adaptability, regularity of production and ease in handling. It stands shipping well and is used for fresh fruit markets and for preserving.

Loganberry, more recently called the Logan blackberry, together with its near relative, the Phenomenal, is popular wherever berries are grown. The fruit is large, juicy, red in color, and rather acid in flavor. It is a fairly good shipper and is also in demand for jelly making. With proper care and plenty of water for irrigation enormous crops are often produced.

Mammoth is a trailing blackberry, producing a long, black, cylindrical fruit, of a flavor preferred by many. Locally it is often called the Black Logan. Its season follows that of the Lawton. Both the Mammoth and the Logan are characterized by having rather small prickles on the canes instead of rigid spines and for that reason are fairly easy to pick.

Cory, otherwise known as the Cory Thornless, has great promise as a home garden fruit. As its name indicates, the canes are free from spines, although occasional canes appear which are as thorny as its supposed parent, the Mammoth. The fruit is large and glossy black in color, but is rather soft and not a good shipper. Being thornless, it appeals to all who have painful recollections of blackberry picking.

Macatawa is a comparatively recent introduction into California, where it has been planted to some extent in the central coast regions. This variety is held by some growers to be identical with Snyder. It may be termed semi-upright in growth, and needs support. It seems to be extremely prolific and has promise as a shipping berry. In the interior valley this variety is known as a one-crop berry, producing all of its fruit within a comparatively short period, but in the cooler coast districts by proper pruning it can be made to bear almost continuously for several months.

Himalaya, recently identified as an old German variety by the United States Department of Agriculture, is one of those vigorous evergreen varieties found in cultivation chiefly on the Pacific Coast, where it is praised or execrated according to how successful the grower has been in keeping it within bounds and escaping its formidable spines. Left to itself, where there is ample moisture, it will quickly take possession of a fence or fill up a corner in the garden, forming a barrier impenetrable to man or beast. It grows luxuriantly and bears heavily. Canes often make a growth of from 20 to 40 feet in a single season. The berry is a rather short conical fruit ripening continuously over a long season, sometimes as late as November.

Dewberries are grown to a limited extent. They are usually trained on low single wire trellises and handled in much the same way as the trailing blackberries. The principal variety grown is the Gardena.

Interest in Raspberries

Raspberry growing has become increasingly important during the past five or six years. The principal areas devoted to this fruit are found in the vicinity of Los Angeles and in the Santa Clara valley about 40 miles southeast of San Francisco. The latter district now produces enough raspberries to supply the local market and to ship three or four carloads per week to eastern markets during the height of the picking season.

One of the principal reasons for the growth of the raspberry industry in the central coast region is because of the introduction and rapid dissemination of the Ranere or St. Regis raspberry. As grown in this district, the Ranere produces two crops per year. The first crop begins to ripen late in April or early in May and continues until about the first of July. The second crop ripens from the middle of August until the forepart of October. It reaches the very early and the very late markets and does not compete with berries from many other sections.

The fruit is light red in color, rather small in size and firm in texture. It is what is known to the growers as a "dry" berry or one that does not bruise easily. Because of these qualities it has proved to be an exceptionally fine variety for eastern shipment. The berries are carefully picked during the forenoon and placed in a modern precooling plant the same day. After precooling, the fruit is loaded into iced express refrigerator cars without allowing it to come into contact with the warm outside air. The

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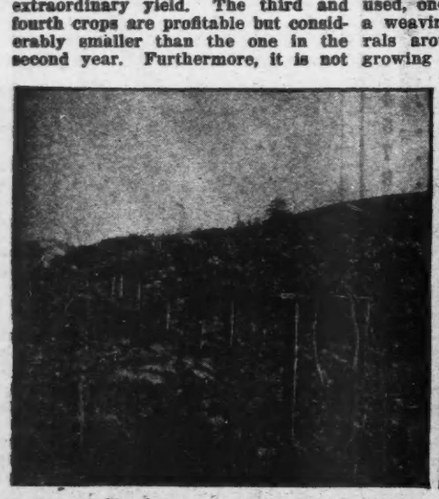
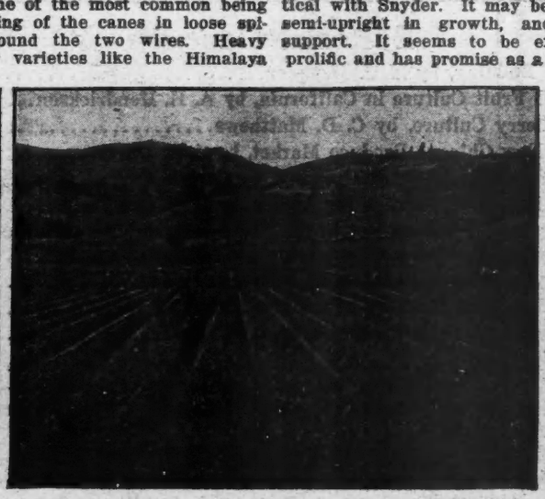
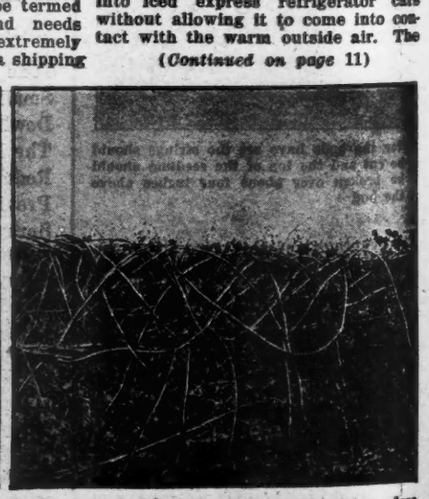


Trailing blackberries supported on two wires stretched from cross-bars



A California strawberry patch planted in raised rows to facilitate irrigation



Trailing blackberries trained spirally about two wires, one above the other

Dewberry Growing

By C. D. Matthews

North Carolina Agricultural Experiment Station

THE DEWBERRY, often called the trailing blackberry because of its habit of growth, is a native American fruit which is rapidly coming into prominence. The fruits ripen earlier and are larger and of better flavor than those of blackberries, and the plants are usually more productive. Dewberries are excellent both for commercial planting and for home use and deserve more extensive planting for both purposes.

The crop is adapted to nearly all parts of the country and to many types of soil. A plantation properly cared for will produce profitable crops for 10 to 15 years. In the South only two years are required to establish a field, and a fair crop is produced the second year. The excellent qualities of dewberries are rapidly making a definite place for this excellent fruit in the markets of the country. The greatest development in dewberry growing has taken place in North Carolina and New Jersey, and the crop has already become important in Michigan, New York, California, Georgia, Maryland, Texas, South Carolina, and Colorado.

How Dewberries Are Distinguished from Blackberries

The dewberry, like the blackberry, bears fruit on last year's canes, which die soon after they have fruited. It also has roots that live for many years and a top that lives only two seasons. Dewberries are distinguished from blackberries, in general, by having canes that trail on the ground, by the early ripening of the fruit, by the character of the flower, and by the method of propagation. Dewberries produce fewer flowers in each cluster, with the center flower opening first, while in blackberries the flowers are borne in rather dense clusters and the stems are shorter. The dewberries propagate by means of tips in the wild state, while the blackberries form new plants by means of suckers. These points of distinction are not absolute because of the many hybrids between the blackberries and the dewberries.

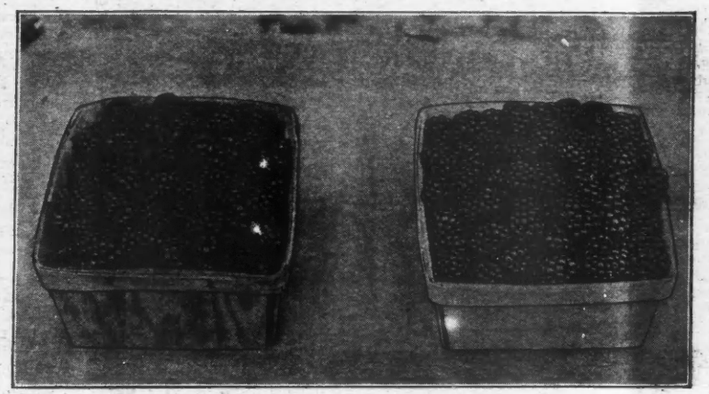
Varieties

Dewberries first began to attract attention with the introduction of the Lucretia variety, which came into general prominence around 1886. This variety has continued to be the most important one grown from a commercial standpoint, with the exception of the Mayes in Texas and the Gardena in California. These three varieties are classed as self-fertile. The Mayes variety is considered by some to be the best home garden dewberry. However, it is a soft berry and does not equal the Lucretia as a commercial sort.

The Lucretia was found near Beverly, W. Va., by a soldier of the Civil War, who sent plants to his father in Ohio. These got into the hands of B. F. Albaugh, of Covington, Ohio, who named the variety and introduced it to the trade. It is the best known and most widely grown variety. The true type is productive and the canes are vigorous. The quality of the fruit is good, with large jet-black berries which are very inviting in appearance. The berries ripen in June in North Carolina. The plants are susceptible to anthracnose and produce many double blossoms. They seem to be adaptable to a great diversity of soil conditions, and to a range in latitude. However, it is necessary in certain northern and middle western states to protect them in winter by covering with soil.

Soils

The dewberry may be grown on a variety of soils. It does best on a soil that contains a large amount of sand. Even the poorest white sands, when properly handled, will yield excellent crops. The ideal soil, however, is a sandy loam with a clay subsoil. Sandy soils supply the drainage and warmth which seem to be essential to the dewberry, but such soils are very poor because they contain little plant food, hold very little water, suffer badly during drought, and are less satisfactory than a sandy loam. A sandy loam contains sufficient sand to provide the necessary drainage, enough clay and vegetable matter to make the soil rich in plant food, and at the same time holds moisture better.



Two quarts of Lucretia Dewberries

The dewberry will not endure a very wet soil, yet the crop requires a large amount of moisture. This is especially true while the fruit is developing and ripening. On poor, open, sandy soil it is often difficult, and sometimes almost impossible, to supply the crop with enough moisture while the fruit is ripening. Often the size of the fruit can be doubled by frequent cultivation at this time. Another important factor in retaining moisture is humus. Humus is decaying vegetable matter, such as leaf mold, compost, stable manure, and cowpeas. In some soils, humus is as important as cultivation. In an open, porous soil humus helps to make such a soil more compact. It also absorbs large quantities of water and during a drought will retain it to a greater degree than a soil without humus.

Dewberry fields should always be thoroughly drained, for the plants will die if the soil is too wet and soggy. It is a waste of time and money to plant dewberries in low, wet soil. Many of these soils, however, are excellent when well drained.

Preparation of Soil

In preparing the soil for the dewberry crop, it is well to begin two or three years before planting. Many soils which are well adapted to dewberry growing contain a very small amount of plant food and little or no humus. These soils must be improved if the best results are to be obtained. Plant food and humus must be supplied in some form, and if this can be done before the plants are set out, it is of decided advantage. If cowpeas or crimson clover can be grown and these crops are turned into the soil, the land is improved and a large amount of humus is also added. Some of the poorest sandy soils will yield good crops of dewberries when treated in this way.

The dewberry occupies the land for at least 10 years, and for this reason the preparation of the land should be more thorough than for annual crops, like corn and cotton. Plowing should be very deep, so as to supply a greater feeding surface to the roots, and to help retain moisture. Much better results will be secured if the land is planted to cultivated crops for two years prior to setting it to dewberries.

Planting

The dewberry can be planted during the fall, winter or spring. Usually only fall and spring planting are practiced, with most of the planting being done in the spring. However, toward the south, fall planting is preferable. At this season of the year there is usually a large amount of moisture in the soil and the plants become more fully established and do not dry out before the growing season commences the following spring. They make a much more vigorous growth and are better prepared to withstand drought the following spring or summer.

Dewberries in North Carolina trained on posts and wire

Dewberries in North Carolina trained on stakes

Plants planted in the spring are subject to drought, they are not well established when the growing season opens, and they are unable to make a vigorous growth or to withstand the hot weather of spring and early summer. If spring planting is practiced, it should take place as early as possible. The plants should be set immediately after being dug or after being received from the nursery. The planter should be extremely careful in protecting the roots from exposure, and this exposure should be reduced to an absolute minimum. The holes should be sufficiently large so that all the roots may be well spread out. The dirt should be packed firmly around the roots. If this is not done, open spaces often remain around the roots, with the result that they become badly dried out and many plants die.

The distance apart for setting the plants depends on the method of training. When the plants are trained to stakes, they are usually set in squares, with the general distance being five by five feet apart each way. On extremely rich soils the plants may be set closer, while on very poor soils six by six feet apart each way will prove satisfactory. When the plants are set in rows and the canes are trained to wires, the plants are usually set two to three feet apart in rows, with the rows four to six feet apart.

Cultivation

The cultivation of the dewberry must be very thorough and should start soon after the plants are set. The soil must be kept mellow, moist, and absolutely free from weeds. If the weeds cannot be destroyed close to the crown of the plant by the cultivator, it will be necessary to hoe them. Under no circumstances must young dewberry plants be allowed to battle with weeds.

During the second and later seasons, cultivation should start immediately after tying up the plants, and should be continued vigorously as long as young growth will permit. The plant requires an enormous amount of water at the time the fruit is ripening. The fruit enlarges rapidly at this time, and the amount of available moisture has a decided influence on the size of the berries. If the amount of moisture is not sufficient, the berries will be small, and if the soil is very dry, the berries often shrivel up and never ripen. The type of cultivator to use should be composed of a large number of small teeth so that a perfect mulch may be kept on the surface and the soil never allowed to become hard or crusted. Such a mulch will retain the moisture in the soil. The number of cultivations during the season will vary, depending upon seasonal conditions. During some years once a week is not too often. Cultivation should be given just as soon as practicable after each shower of rain. In the sandy soils of most dewberry sections this is easily done because the nature of the soil is such that it is not injured by cultivating before thoroughly drying out. This practice prevents the soil from becoming hard and compact, and helps to conserve soil moisture. In addition, careful cultivation keeps down the weeds, which is very important.

It is important to see that no injury as a result of cultivation is done to the fruiting vines. Usually the greatest amount of injury is done by a long single-tree and by careless labor. The single-tree should be as short as possible, and every precaution should be used to prevent injury.

Training

Two methods are commonly employed in training dewberries. The stake method is the more desirable and the one most often used, the wire method being used only in regions where stakes are too expensive.

In the stake method, stakes about seven feet long are placed in the ground two feet deep near each plant. The stakes are generally two to three

(*Continued on page 14*)

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SAMUEL ADAMS W. A. SCOTT HAZEL BURSELL
MARY LEE ADAMS

What Tiny Beings We Are

DO YOU ever get "chesty" about your accomplishments and do you ever marvel about the greatness of mankind and of this old Mother Earth that we are occupying? If so, we invite your thought toward some of the new information recently developed in astronomy.

By means of new methods of measuring the distance and diameter of stars, astronomers have given us some most interesting information about Mira, called "The Wonderful by scientists because of its periodic variations in brilliancy.

Mira, in astronomical language, is 165 light years away. Light travels 186,000 miles a second, and a light year is the distance that light can travel in a year, which is about 6000 billion miles. The distance of Mira from us, therefore, is entirely beyond comprehension.

As to size, Mira is about 250,000,000 miles in diameter. If Mira were hollow, the sun could be placed in the center and there would still be plenty of room for the earth to revolve about the sun without touching the surface.

But Mira is only the second known star in size. Antarres, the largest known, is about 400,000,000 miles in diameter. There are a number of stars known which are 20,000,000 miles or more across. Our earth is 8000 miles in diameter and our sun, which is about 90,000,000 miles from the earth, is about 864,000 miles in diameter.

From these big things, bring your mind back to earth and let it think about some of the small things that exist. The living organisms of the earth are composed of the smallest and most delicate parts, and we understand very little about them. Microscopes have shown us living beings one-twenty-five-thousandths of an inch and less in diameter, each composed of smaller parts, all functioning in regular order.

Then reflect for a moment on the precision that exists in the universe, both with respect to large and small things. The movement of the earth and stars takes place with the utmost precision. Astronomers can predict a year in advance just where the earth will be at a certain moment and where the shadow of a mountain will fall at that time. The life processes of living beings are so delicate and finely adjusted that they are as yet understood to only a small extent by even our best scientists.

In comparison with these things, the best works of man are extremely crude. His fastest and most dependable passenger trains and aeroplanes are exceedingly slow and irregular compared with all of the movements in the great universe. The most delicate contrivances of man are cumbersome affairs compared with the life processes going on all over the earth and supposedly in many other heavenly bodies.

It seems dreamy to speculate about these things, we freely admit, but yet we believe it is a good thing occasionally to do things like this. Such thoughts help us to learn better our places in the vast order of things, and they help us to learn that after all we are only tiny beings in the great plan of God. With such thoughts, we can better appreciate our places in life, and this attitude will help us to perform our parts better.

School of Co-Operation

CO-OPERATIVE leaders of the entire country should be interested in the school of co-operation which will be held by the American Institute of Co-operation at the University of Pennsylvania from July 20 to August 15. The institute is a non-profit organization and is backed by a number of leading agricultural organizations and co-operatives. It is seriously interested in promoting the cause of co-operation in every legitimate way.

A rounded program will be presented in which the fundamentals of co-operative marketing will be handled by lecturers and instructors who will be selected from the foremost authorities in the country.

The cause of co-operation has suffered much because it is a comparatively new venture in many sections and because many would-be leaders and members have not understood its principles very well. There are some things co-operative associations can do and some which they cannot do. It is well for those having anything to do with the movement to learn what these things are, for it is only by this means that many disappointments can be avoided and that the greatest satisfaction can be secured all around.

As it is now, there is no place in the country where complete instruction on co-operative marketing can be secured. People interested in the subject must pick up a little here and a little there to become familiar with the principles involved. The forthcoming school should prove a valuable aid in teaching the true principles of co-operation, and we advise every person interested in co-operative marketing to attend the school if possible.

Detailed information about the school can be secured by addressing the American Institute of Co-operation, 1731 I street, N. W., Washington, D. C.

School for Variety Identification

IN PAST years a great deal of confusion and many disappointments have occurred in regard to varieties of fruit trees. Many growers have ordered fruit trees of a certain variety and have found after years of expense and care that the trees were of varieties other than those desired. In some cases such experiences have been the result of buying from fly-by-night agents, and in other cases they have been the result of errors on the part of well-intentioned nurserymen.

A development has taken place in the last few years that will undoubtedly help greatly in preventing such disappointments in the future. Prof. J. K. Shaw of the Massachusetts Agricultural College has devised a system of identifying fruit trees by their leaves. This system has already received some publicity, and it has proved a reliable means of identification of many varieties.

In order to bring about wider use of this system of identification, arrangements have been made to have Prof. Shaw conduct a school on variety identification at Geneva, N. Y., during late June or early July. The school is being planned by the New York Agricultural Experiment Station, the Massachusetts Agricultural College, the New York State College of Agriculture, and the American Association of Nurserymen. The financial assistance of the latter organization is making the project possible.

Prof. Shaw will give two lectures each day on various phases of nursery work and fruit growing, and there will also be classroom and nursery demonstrations in variety identification. The work will be as intensive and practical as possible.

The school will be open to workers in agricultural colleges, advanced students and experienced nursery workers. Whether or not the project is carried out will depend on the demand. A circular has been sent out to about 500 nurserymen to ascertain what interest there will be in the proposition. There ought to be no trouble in interesting plenty of people in this school to make it a big success.

Great Building for Agriculture

A MOVEMENT is on foot in Chicago to build a great agricultural building, which is to be called the "Agricultural Mart." It will be used for agricultural organizations and others operating along allied lines, of which there are a large number having headquarters in Chicago. It will be the largest building in the world when completed and will contain 60 acres of floor space. The building will be located east of Michigan avenue and south of the Chicago river and will be supported partly on piers built between the I. C. railroad tracks, if present plans materialize. The cost is estimated at $35,000,000. The plans call for a radio station on the top of the building, with a range of 6000 miles and with the antennae 1000 feet above the ground.

A meeting of 100 agricultural leaders was recently called at the Furniture Mart in Chicago to ascertain their attitude toward the building. At this meeting Lawrence Whiting of Whiting and Company, explained the proposed project. Whiting and Company will finance, build and manage the undertaking. No attempts will be made to sell stock to farmers or farm organizations. Space will be rented to interested organizations at reasonable rents and a committee representing agriculture is to pass on the eligibility of applicants.

At the close of the meeting a resolution was adopted endorsing the proposition and the following committee was appointed to represent agriculture in developing contacts and in passing on the eligibility of tenants who make application for space:

W. E. Skinner, National Dairy Association; S. H. Thompson, Illinois Agricultural Association; O. E. Bradfute, American Farm Bureau Federation; C. V. Gregory, Prairie Farmer; George A. Ranney, International Harvester Company; E. Meese, De Laval Separator Company, and C. E. Durst, American Fruit Grower Magazine.

It is very appropriate that such a building should be constructed in Chicago, which is the agricultural capital of the country. It should prove of real value to the many agricultural organizations having headquarters in Chicago, and it should also be an important factor in creating a better understanding between big business and agriculture.

The New Chicago Produce Market

By C. E. Durst

WHILE you have been worrying your way through the past winter and making preparations to produce a big crop this year, the city of Chicago has been making some changes that promise to have a vast influence on the handling and marketing of perishables in that city. I have been following these developments so far as possible in the past few months and I believe readers of the AMERICAN FRUIT GROWER MAGAZINE will be interested in them.

Before discussing the new market, let us consider briefly the old South Water Street market and its problems. This will bring before us a picture of the entire situation that will help us gain a clearer perspective of the moving forces behind the proposition.

Growth of South Water Street Market

The South Water Street market sprang up about 100 years ago along an Indian trail on the south bank of the Chicago river. It gradually grew with the city. In recent years it has become one of the largest produce markets in the world. In 1924, 56,412 cars of fruits and vegetables were unloaded in Chicago. Most of this went through the South Water Street market. In addition, enormous quantities of vegetables were brought to the market from Cook County, which is the home of Chicago and the third largest vegetable producing county in the United States. It is estimated that the produce industry of Chicago does a business of about $500,000,000 per year. It is the second largest industry in Chicago, being exceeded only by the packing industry.

Notorious for Its Inefficiencies

The market has been notorious for its inefficiencies in recent years. The narrow street delays traffic, increases the expenses of handling, and causes serious deterioration of the products. The sidewalks are narrow and the stores are poorly arranged and equipped, but these are only minor defects compared with others. As Chicago has developed into a great metropolis, the market has become very badly located. It is situated just north of the "loop." Practically all of the railroad freight terminals are located south and southwest of the loop, and many of them are on the west side of the Chicago river. The Illinois Central is the only system handling large amounts of perishables which is located conveniently to South Water Street, being just east of it. Only about 10 per cent of the produce is consumed in the loop, while 90 per cent of it goes to outlying sections of the city and suburbs. There is, therefore, no good reason why the market should be located so close to the loop. Furthermore, the main thoroughfares to the various railroad terminals and to outlying sections of the city do not connect up well with South Water Street. As the market is now located, most of the produce has to be hauled through the loop from the railroad terminals south and southwest of the loop, and after the produce is sold, it must be hauled out again over rough, congested streets before the main streets leading to the city's outskirts can be reached. Such conditions add greatly to the cost of handling produce in Chicago, not to speak of the waste in products.

Dealers Have Always Defended the Street

In spite of all of these conditions, most of the South Water Street merchants have always stood ready at the drop of a hat to defend the street. One of the men who occupies a leading position in produce matters told me a couple of years ago that the congestion on South Water Street was actually an asset. I said nothing in reply but wondered whom it was an asset to.

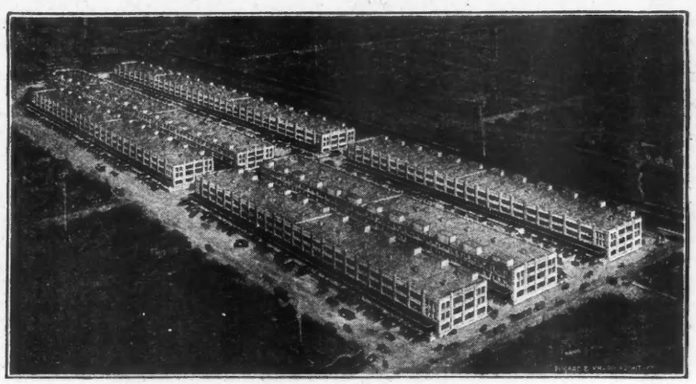
Notwithstanding the opinion of the produce men at large, there have always been a few who have believed South Water Street conditions could be improved upon. A number of years ago, a group of leaders tried to interest the trade in the development of a new market site, and tentative arrangements were made for the purchase of a site along the Chicago river, said to be especially adapted for the purpose. However, sufficient interest could not be aroused in the project, and it failed. From time to time some of the dealers have moved to other places, but in every case but one it was found impossible to develop a good business elsewhere. Only on West Randolph Street have any of the dealers been able to develop another produce market of any consequence. No doubt the success of this market, located west of the loop and Chicago river, is due largely to the fact that the truckers of Cook County sell their products from wagons and trucks in the middle of this wide street.

Work of the Chicago Plan Commission

The proposition of getting the produce dealers together on a new market development has seemed hopeless for many years. It remained for the city of Chicago to force the hand of the dealers. For several years the city has had a Plan Commission. This body, having an eye to the future, has studied the city's problems, and as a result of its recommendations, the city has made many marked improvements.

Several years ago the Commission succeeded in connecting up Michigan Avenue and Sheridan Road along the lake front. This thoroughfare needed connecting up with Washington and Jackson Boulevards on the west side of the loop and river, and also the congestion in the north end of the loop caused by the produce trade needed to be relieved. The Commission recommended moving the market elsewhere and the conversion of the street into a double-decked thoroughfare. The upper deck is to be for light vehicles and the lower deck for heavy traffic.

The recommendation was approved by the city council and various authorities, but the produce men caused all the delay possible, through the courts and otherwise. Finally, after the site of the old market was condemned, the dealers began to make preparations to move. After much controversy, the South Water Market Trust, a non-profit organization, was formed. This consists of about 150 firms doing business on the street. This body of men decided it would be better to co-operate in developing a new market than to move promiscuously to locations in the vicinity of West Randolph Street or elsewhere.



Architect's drawing (looking southeast) showing how the new market will look when completed

How the Land Was Acquired

After several false reports had appeared regarding the selection of a site, it was "officially" announced that practically all the land required had been bought up secretly in the vicinity of Ashland Avenue and Fourteenth Place, just north of the Baltimore and Ohio and Great Western tracks. This site is southwest of the loop, about one and one-half miles, as shown on the accompanying map. Through agents, the land was largely bought up before it became generally known what was being done. However, some rumors got into circulation and values immediately began to jump as a result. The land cost from $20 to $2000 per front foot. Some lots bought early cost only $2000, while a few bought near the close of the campaign cost $50,000 to $60,000 each.

Method of Organization and Financing

The produce dealers will pay an annual membership fee of $25 per year for 10 years. They have signed a non-cancellable agreement to abide by the rules which the organization will make. This is in itself, according to Charles R. Godding, one of the leaders of the movement, a great step forward in the produce business and will help greatly in improving business practices on the market.

Under the plan, each firm is to eventually own its own store. Each member, in addition to paying the membership fee, paid in about 10 per cent of the purchase price at the time of joining. The amount thus raised was used for initial financing. To finance the remainder, S. W. Straus and Company of Chicago is selling $8,000,000 worth of six per cent first mortgage bonds to the public. The bonds are to be executed by the Chicago Title and Trust Company, trustee, under a trust for B. H. Goodman and Hugh McLennan, who are erecting the store buildings. The South Water Market Trust has transferred the land to Goodman and McLennan under a trust agreement, and the land and stores will both be transferred to the dealers as they pay for them.

Market Facilities Carefully Planned

The new market has been carefully planned by architects, with the advice of produce men. It is claimed that the market will be equipped with the most modern facilities. There will be paved streets 90 feet wide between the buildings. The sidewalks will be 16 feet wide and 30 inches above the street, covered by a 15-foot steel-glass canopy. There will be 12-

(*Continued on page* 16)

1. This is not Murphysboro, Ill.; it is a wrecking scene preparatory to construction of the new produce market in Chicago
2. Moving large buildings from the market site, a common scene in the streets near the market place
3. An excavation showing the mud and water encountered in building the store buildings in the early spring
4. The market buildings under construction as seen from the B. & O. tracks looking northwest
5. Looking almost west from B & O tracks
6. View looking almost east from B. & O tracks, which run east and west immediately south of the market site

Rodent Pests in Fruit Growing

By Carlyle Carr

Biological Survey, U. S. Department of Agriculture

THE COMMERCIAL fruit grower has become accustomed to fighting diligently the insects and diseases which tend to make his industry unprofitable. He has not, however, been similarly active in fighting other pests which in many sections are equally as detrimental to his interests. We refer to such animals as the rodents, including field mice, rats, groundhogs, and rabbits, which are generally prevalent in orchard districts and responsible for the annual loss to crops and property amounting to many millions of dollars.

Practical and thoroughly reliable ways to control these animals have been devised by the Biological Survey of the United States Department of Agriculture. As many worthless or poor remedies are on the market, and unsatisfactory methods have been advocated by certain manufacturers, it is the object of this article to give to readers of the AMERICAN FRUIT GROWER MAGAZINE an outline of the best and most practicable methods of controlling these pests, based on several years of experimental and practical demonstration work of the Biological Survey.

Short-Tailed Field Mice

Have you ever noticed an apple tree which set an unusually large crop in the spring, die in midsummer, the leaves turning yellow and dropping off, but with the half-grown apples still clinging to it? This is the manner in which a bearing tree usually dies when girdled by short-tailed field mice, commonly called ground mice.

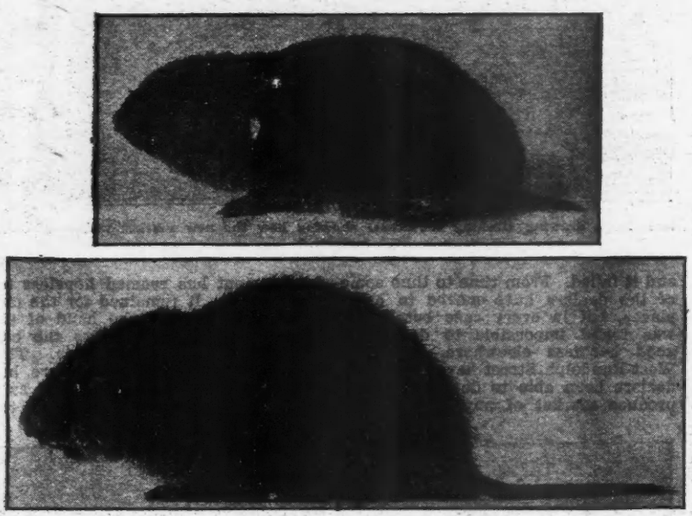
There are two kinds of these short-tailed mice, one known as the meadow mouse, which usually girdles the tree above the surface of the ground; the other the pine mouse, which gnaws far down on the roots. The meadow mouse ranges over the entire United States, while the pine mouse is largely restricted to the territory east of the Mississippi River.

When mice become abundant in any section, or when there is a scarcity of mouse food in the orchard, no apple tree, regardless of size, is safe from attack. Damage to trees is usually done during the winter when food becomes scarce. Apple trees appear to suffer most, although other orchard trees, nursery stock, small fruits, and shrubbery are also injured to a large extent. Recent reports from Connecticut tell of the destruction by field mice of nearly 60 per cent of the trees in a nine-year-old apple orchard, the killing of 2000 of 3000 pear trees in another orchard, and the total destruction of a plantation of 500 peach trees. An orchardist near Cairo, W. Va., lost several hundred nine and 20-year-old trees in 1923 by the work of pine mice.

In regions where only the meadow mouse is found, clean cultivation about the trees and mechanical protectors prevent the damage to a large extent, but in the region east of the Mississippi River, effective control can best be accomplished by using a poison bait in the orchard. The best bait found by the Biological Survey to control all kinds of mice is prepared as follows:

Poisoning.—Mix one-eighth ounce of powdered strychnine and one-eighth ounce of baking soda and sift over one quart of rolled oats. Place the rolled oats in an oven until thoroughly warm, then stir into the oats, until thoroughly coated, six tablespoonfuls of hot-beef grease-paraffin, prepared by mixing one part of paraffin to three parts of beef grease. The beef grease-paraffin coating protects to a great extent the poisoned rolled oats against atmospheric moisture. Teaspoonful quantities of the poison bait should be placed in mouse runways or holes, but preferably in such receptacles as tin cans, open-mouthed glass bottles or wooden containers. Commercial orchard men in the East put containers at the bases of the trees and place fresh bait in them three times a year, about November 1, January 1, and in the spring. The wooden type of container illustrated herewith is easily made and has given the best results. It is six inches square at the bottom and eight inches square at the top. The two strips of wood at the sides are one and one-half inches high. A groove across the middle of the bottom board, which may be quickly made with a chisel and hammer, holds the bait in the container. In the orchard one of the open ends of the container should be set against the tree and coarse grass or weeds, weighted down by a rock or clump of sod, placed on top of it.

An orchardist near Aurora, Ind., had a large number of mice in his orchard a year ago last fall and states that he gained complete control after baiting his orchard twice by this method.



Short-tailed and long-tailed field mice

Rats

Nothing is more annoying or troublesome than rats in the apple storage. They munch into the apples on top of the barrel, apparently seeking only the seeds, and leaving the fruit looking more fit for the cider press or the dump heap than for a profitable market. The damage they do to foodstuffs, such as grain, poultry, eggs, and meats, and to buildings, often amounts to more than the taxes on the place. A large part of this loss is preventable, because rats can be controlled. To free one's premises of rats, one must recognize two facts: (1) rats are clever and suspicious animals, and (2) they are very prolific breeders. The young female rat begins to breed when three or four months of age and breeds six to 10

(*Continued on page* 31)

Providing Cold Storage for Apples

By H. C. Campbell

TO PROPERLY market the yield of a commercial orchard, it is necessary to extend the period of distribution to the consumer over a longer period of time than the life of the fruit would be were it exposed to varying conditions of temperature and humidity. To preserve the fruit means storage in a room with a constant temperature of 31 to 32 degrees Fahrenheit and a relative humidity of 85 to 90 per cent.

It would be difficult to lay too much emphasis on better marketing of fruit. In the last 15 years, great advances have been made in the production of fruit, in the control of diseases which blight the crop, and in the improvement of quality. But unless the product of this effort flows out to the consumers as they can use it, so that there will be neither surplus nor famine, the work of producing more and better fruit fails to benefit either the producer or consumer. Fruit ranches, co-operative organizations and commercial handlers are constantly feeling the need of better storage facilities.

Storage Plant Should Facilitate Operations

The storage plant should be laid out so there will be as little handling as possible and each operation moves the product towards the place where it will next be needed. If possible, it is advisable to have the building built adjacent to a railroad siding. The receiving side door should be elevated to the height of a truck or wagon bed and the shipping side should be level or slightly higher than the car door.

As the apples are received, they are taken into the sorting room, where the imperfect fruit is sorted out and that which is suitable for storage and sale is graded and packed in such containers as may be used. After going through these preliminary operations, the fruit is placed in the cold rooms where it is kept until time for shipment. Racks should be built in the storage rooms to permit a complete circulation of air around each package and also that the different containers may be inspected frequently so that their keeping condition may be readily ascertained.

Masonry Walls with Air Spaces Best

Masonry walls in which the units are hollow or have air spaces are best for cold storage use from the standpoint of insulation. They resist moisture and have insulating value on account of the hollow spaces where air is confined.

In building a concrete masonry storage house, it is important that the foundations be put on solid footings so there will be the least amount of settling. That is the secret of good masonry construction.

Footings and foundation walls must have sufficient strength to support the weight of the building safely and without settlement. In order to prevent possible upheaval by freezing, footings must extend below possible frost penetration even though firm bearing soil is found at a shallower depth. The depth to which frost penetrates varies and may be as much as six feet in sections where winters are severe.

Concrete foundations should always be laid upon firm, dry soil. If soft soil, loam or decaying matter is encountered, it must be removed. The bearing power of soils is quite variable. Some earth is so soft that it cannot safely be loaded with more than one ton per square foot. Hard gravel and well compacted clay will carry about eight tons to the square foot, while some rock can be loaded up to 100 tons. The width of the properly designed concrete footing should be such that the soil is loaded with a weight no greater than it can safely carry without possibility of settlement.

Safe Load for Various Soils

The following table indicates the safe load for various soils:

Character of Soil	Safe Load per Square Foot.
Soft clay	1 ton
Wet sand	2 tons
Firm clay	2 tons
Fine and dry sand	3 tons
Hard, dry clay	4 tons
Coarse sand	4 tons
Gravel	6 tons

To calculate the proper width of footing, it is necessary to estimate the weight of the building and contents and to make reasonable assumption of the bearing power of the soil.

The employment of concrete block and concrete building tile simplifies the work of both designer and builder, and gives the owner the advantages of rigid, permanent and maintenance-free construction, with a saving in both the cost and the time required to build. The wall dimensions of available units lend themselves conveniently to any desired design and makes calculations simple. Concrete block and building tile lay up rapidly, bed firmly in the mortar, and provide surfaces to which mortar adheres with great tenacity. Portland cement mortar is recommended for laying concrete building units because of its great bonding power, compressive strength, density and resistance to weather.

It should be made with clean, graded sand and clean water. Well slaked or commercially hydrated lime is usually added to make mortar more plastic or "fat." For ordinary work, a mortar composed of one part cement, one part lime and six parts of sand (measured by bulk) is considered satisfactory. Mortar should be mixed thoroughly with just enough water to give suitable plasticity. The batches should be only of such size that they can be used within 30 minutes after water is added. Retempered mortar should not be used.

In block, the amount of air space varies from 20 to 40 per cent of their volume, but in most common types it approximates 33 per cent. The tendency is to increase the amount of air space to about 40 per cent, producing a lighter, more economical unit.

Sizes of Block

Block are made in various sizes. The six by eight by 16-inch block is perhaps the most common. It makes a wall eight inches thick and courses eight inches high. Block are also made

(*Continued on page* 17)

$495
F. O. B. Detroit
Fenders $35 Extra

Fordson Usefulness Is An Established Fact

Many thrifty, successful fruit growers have abundantly proved Fordson value.

It supplies power for plowing, grading, irrigation trenching, cultivating, pumping, spraying and hauling. It can be kept on the job day and night, rain or shine.

The Fordson is so compact and low built that it gets around and under trees without injuring them. It is easy to operate, and it turns around within a very small circle.

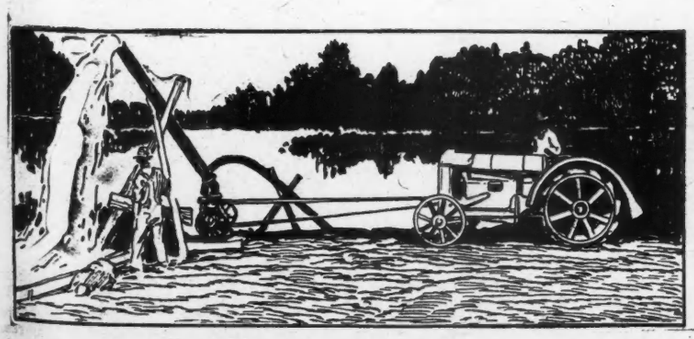
By reducing labor costs and helping to keep orchards in better trim and producing finer fruit, the Fordson is considered by many fruit growers as a prime factor in their success.

Give your nearest authorized Ford dealer a chance to demonstrate in your own orchard, with your own equipment, what a Fordson Tractor can do. The showing made will surprise you.

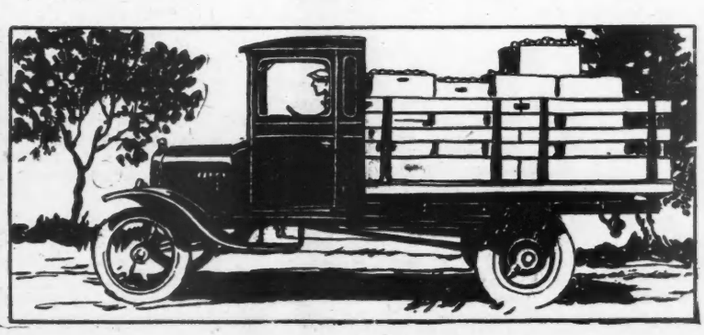
Ford Motor Company
Detroit, Michigan

Fordson

Plowing cover crops under is a Fordson job.



Irrigation operations are easily done.



Ford trucks haul the fruit to market.

Spraying for Brown Rot in the Northwest

By Charles Brooks and D. F. Fisher

United States Department of Agriculture

ONE OF the most serious problems in the successful growing and marketing of stone fruits is the control of brown rot. This disease not only kills the blossoms and fruit spurs and reduces the crop at its very start, but continues to attack the growing fruit with increasing severity as maturity approaches. Ripe fruit that is sound today may show rot spots tomorrow and in a short time is a total mass of decay. A carload of fruit may be inspected and passed as sound and free from decay at time of shipment, but in a few days, when received at destination, it may be worthless and rejected because of brown rot that has developed in transit.

All this is an old story to eastern peach growers, but it has hardly yet come home to the growers of the Pacific Northwest. It is true that some of these northwestern growers have had disastrous results from brown rot in shipments of sweet cherries, and such shipments from the humid sections west of the Cascade Mountains have come to be regarded as hazardous. But the prune growers of the same region have not been in the business of shipping fresh or "green" prunes until within the last year or two, and consequently have yet to learn the extent to which brown rot can limit shipping and marketing operations.

It will be unfortunate, as the losses from brown rot become more evident, if instead of adopting those orchard and cultural practices which will control the disease, efforts are first directed to harvesting the fruit in a harder and greener state "so that it will hold up better." This practice has already done harm to the western fruit industry and has fostered the idea so generally held by eastern consumers that western fruit "looks well but has no flavor." It has been carried to the extreme by shippers of fresh plums and it was probably a factor in the collapse of the market two years ago. It may be that this tendency has arisen in part from a desire to get on the early market, but it seems that brown rot has also been a contributing factor and is likely to become a greater one.

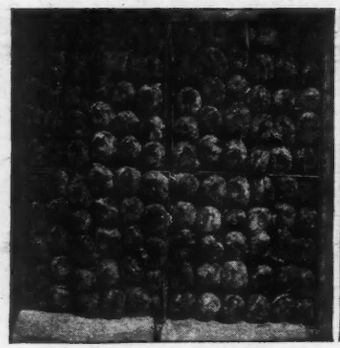
It should be noted that prunes and sweet cherries are also produced in large commercial quantities in the irrigated sections east of the Cascades, where brown rot does not occur. This discussion applies particularly to the region west of the mountains where the disease is a continual, although varying, factor.

That properly matured sweet cherries and prunes can be shipped from the humid sections of the Pacific Northwest, with negligible loss from brown rot, has been proved by shipping tests conducted by the United States Department of Agriculture. That brown rot may be a source of serious loss in the case of fresh fruit shipments even when the disease is apparently not at all seriously prevalent in the orchards was proved in the same experiments.

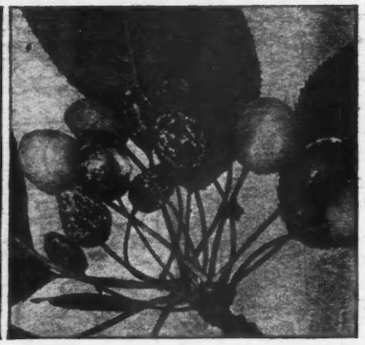
The experimental work was conducted in the general vicinity of Portland, Ore. At the time it was in progress, from 1915 to 1919, sweet cherry shipments from this region had largely been abandoned and the fruit had to seek a local cannery market. Prunes were evaporated and sold as dried fruit because the fresh fruit would not "stand up" with that grown under irrigation east of the Cascades. Since that time there has been a revival of interest in brown rot control, due to a serious outbreak in 1923, which reduced the crop fully 30 per cent, and also to a crop failure from frost east of the Cascades in 1924, which caused shippers to utilize the brown rot susceptible prunes from western Washington and Oregon to supply the demand for fresh fruit.

Brown Rot in the Orchard

It was found that the chief source of early spring infection is the apothecia, or little brown "toadstools" that arise from old rotted fruits which have fallen to the ground. The rotted fruits that adhere to the trees and remain until the following spring as dried-up mummies, produce spores that are carried by wind or insects to the blossoms where, in the presence of moisture, they germinate and soon produce a "blossom blight," causing the flower to turn back upon its stem, and giving rise to countless more spores which continue to spread the disease. These primary sources of infection should be removed by early plowing and cultivation during the blossoming season instead of waiting until later, as is common practice. The mummies in the trees should also be removed and destroyed.



Left: Prunes showing damage from brown rot

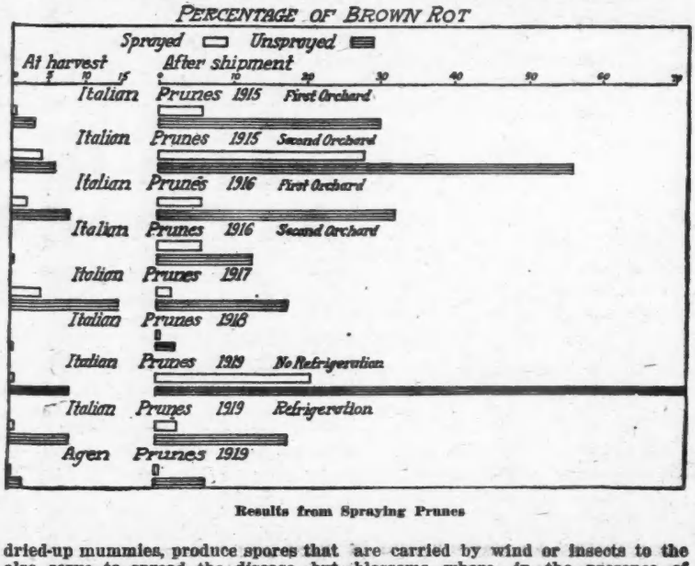


Right: A cluster of sweet cherries infected by brown rot

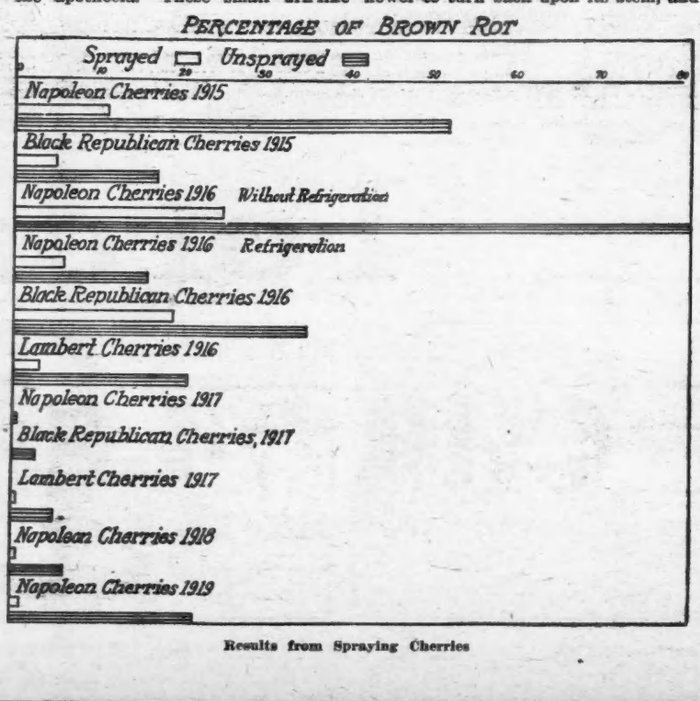
The young green fruits may be infected but are less susceptible than either the blossoms or the ripening fruit. As the fruit matures, brown rot generally becomes more prevalent, but since the fungus is a plant and its spores require moisture for germination, the same as the seeds of the higher plants, the seriousness of the disease is determined by the prevalence of rains, dews, or heavy fogs which wet the fruit and keep it moist until the spores can germinate.

The grower located west of the Cascades in the Pacific Northwest operates under peculiar climatic conditions which render brown rot an insidious disease to handle. The winters are very mild as a rule, with rain instead of snow, and the spring is rainy, followed by three months of summer which are generally rainless or nearly so. Consequently cherries ripen and are usually harvested without any striking loss from brown rot on the trees, unless a showery period should prevail, which is rather unusual. The prunes generally approach maturity without rains, but after the middle of September rains are to be expected. Sometimes they come earlier, and then the huge losses from brown rot occur, such as those experienced in 1923.

This generally rainless summer, the expense involved in spraying, and a dislike for all spraying operations, have led to a "gambling with the weather" and to an impression on the part of some that it is both useless and hopeless to attempt to control brown rot. That the disease can be controlled by the methods used in the more humid sections of the United States has been fully demonstrated by various spraying tests. In the five years covered by the experiments of the Department of Agriculture, brown rot never ran higher than four per cent in the sprayed plots of prunes, and was usually held at a fraction of one per cent, while in the unsprayed plots of the same orchard eight to 15 per cent of the fruit was often affected, and in orchards that were entirely unsprayed, there was sometimes a loss of 50 per cent of the crop.



Results from Spraying Prunes



Results from Spraying Cherries

Brown Rot in Transit

Brown rot spores are practically always present on the fruit when it is packed and shipped, requiring only the presence of sufficient moisture to germinate and produce a rot. The further ripening of the fruit in transit of course increases its susceptibility. Once started, brown rot spreads by contact as well as by spores so that its progress is rapid. Shipments naturally carry better under refrigeration because the activity of the fungus is retarded, but it is impracticable under commercial conditions to reduce the temperature in transit to a point at which no fungous growth will be made.

Shipping tests with both fresh prunes and sweet cherries were made in each of the five years covered by the above mentioned spraying experiments. A part of these shipments were made by ordinary express and a part in "pony" refrigerators. The shipments were en route and at the receiving point from four to fifteen days, and many of the "pony" refrigerators were shipped across the continent to the eastern coast. The most striking feature of the experiments was the contrast between the sprayed and the unsprayed fruit.

In the five years' test on sweet cherries, there was never more than a mere trace of brown rot in the orchard at picking time, either on the sprayed

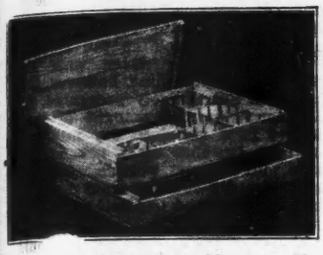
(*Continued on Page 25*)

Small Fruit Culture

(Continued from page 4)

"berry car" is handled on a fast overland passenger train. The charges for icing and express are very high, but the fruit, thus far, has sold for high enough prices to return the grower a satisfactory profit. It is doubtful whether any other fruit not possessing the delicate aroma and flavor of a bush-ripened raspberry could command prices that would justify these expensive transportation charges.

For local shipment raspberries are handled in the chests used for other berries, but for eastern shipment the Eaton crate is used. This crate is flat and contains 12 shallow cups in a single layer. The end pieces are ridged, as shown in the photograph, that the crates may be stacked. The ridges prevent the crates from slipping sideways and are of great as-

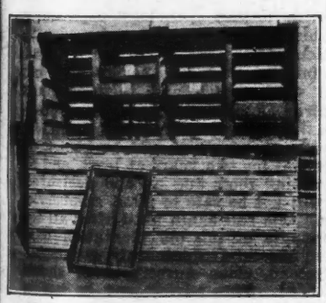


Berry crates for eastern shipment. The form of the end pieces permits several crates to be stacked together, making individual covers unnecessary

sistance in preventing movement of the packages in transit. Usually about five crates are fastened together. No covers are necessary except for the top one.

How Two Crops Are Produced Each Year

The Ranere, or Ranaree, as it is locally known, is grown in hedge rows six to seven feet apart. The plants are not robust growers and usually do not grow more than four or five feet tall. Suckers are produced in abundance and the rows need to be thinned out each year. The peculiar characteristic which makes this variety so valuable to the California grower is its habit of producing fruit on the ends of the current season's growth. The berries thus produced constitute the second crop. True to the nature of the genus *Rubus*, the fruiting part of the cane dies after it has borne a crop. The terminal 12 or 14 inches which produces the second crop are cut off when the plantation is pruned



Berry crates used for local shipment. Each chest holds 20 slides of six cups each. The front of the chest is hinged to permit withdrawal of the slides

during the winter. The following spring the fruit buds lower down on the cane, which had not developed far enough to produce fruit the preceding autumn, blossom and bear fruit. This constitutes the spring or main crop. The very earliest berries are produced from buds immediately below those which bore in the previous autumn. If the canes are cut back too far at pruning time, but few early berries are produced.

Red Spider a Serious Pest

The California berry grower, al-

(Continued on page 20)

Spray Injury to Peaches

By Arthur J. Farley
New Jersey Agricultural Experiment Station

SPRAY injury is an old story to the peach grower, who for years has known that the peach tree is very susceptible to injury by spray materials applied during the growing season. Concentrated lime-sulphur, Bordeaux mixture and many other common spray materials are used to a very limited extent as summer fungicides for peaches because of the great danger of serious injury. It has also been found that under certain conditions lead arsenate will seriously injure peach twigs and foliage. This particular type of injury, although of frequent occurrence for many years, has been more serious than usual during the last few years, and, therefore, a description of the injury with recommendations for its prevention may be of interest at this time.

It has been observed that the injury appears in several different forms: namely, leaf injury generally followed by defoliation, cankering of the one-year wood, and cankering of the new growth.

Leaf Injury

The leaf injury appears in the form of irregular spots, usually purple in color at first, later turning brown in the center with an irregular purple or brown margin. The edges of many leaves also show the same kind of injury. The older leaves near the base of the growing shoots appear to be more susceptible to injury than the young leaves near the tip, which usually are not affected. Leaves that are severely affected usually fall a few days after the injury makes its appearance. It is of interest to note, however, that the leaf injury just described may not appear until a month, or six weeks, after the trees have been sprayed with a mixture containing lead arsenate, a condition quite different from lime sulphur injury, which usually occurs a few hours after the spray is applied.

The leaf injury and defoliation just described should not be confused with bacterial leaf spot, a disease that also causes spotting of the leaves, accompanied by defoliation. It is sometimes difficult to distinguish between the spots caused by arsenical burning and bacterial leaf spot. As a rule, the spots caused by the latter are somewhat more uniform in size and more ragged than the spots caused by the arsenical spray burn. Furthermore, bacterial leaf spot is generally accompanied by some injury to the fruit in the form of small, irregular cracks through the skin, while arsenical spray injury to the foliage is usually associated with twig injury in the form of cankers.

While the second form of injury, namely, cankering of the one-year wood, is usually associated with leaf injury, in some cases cankers may develop without any severe leaf injury or defoliation.

Twig Injury

On one-year-old twigs one-fourth to three-fourths of an inch in diameter, the first signs of injury appear as slightly darkened blotches mainly along the upper or more exposed surface. If the first layer of the bark is removed, the cankered area shows a reddening of the tissue immediately below the corky bark and a water-soaked condition of the deeper layers. The later development of the canker depends on the tissues affected. If the burning affects only the cortex, or outer layer of cells, the twigs continue to enlarge and the injured cortex cracks and partly sloughs off, giving a very shaggy appearance. If the cambium is killed, the cankered areas become sunken, due to the growth of adjacent tissues, finally crack, and in wet weather exude amounts of gum. In case of severe burning, many twigs have spaces six inches to one foot long where the cambium has been destroyed on the more exposed side. Occasionally a canker completely girdles a twig, causing a slow death, but in most cases enough uninjured cambium remains to start a healing growth process which will bring the twig back to normal within one or two years. The bark, however, remains very rough for some time, and old cases of injury can usually be recognized by these shaggy-barked limbs.

The effect of the girdling is also shown in the appearance of the foliage on the injured branches. The leaves gradually roll and droop and at the same time lose most of their normal green color, thus presenting an appearance that is typical of any girdled branch or tree.

Twigs and Branches Weakened

The injury on the new growth usually occurs where it joins the one-year wood and around the older or lower buds in the form of small brown cankers, similar to brown rot cankers. The cankers at the base of the new growth often completely surround the twig and girdle it, with the same result as described in connection with the one-year wood. Cankers formed at the base of either the new growth or the one-year wood weaken the branch, sometimes to the extent that it splits or breaks during a high wind or under a heavy load of fruit. Furthermore, weak twigs and branches, particularly those located toward the center of rather thick trees, may be so severely injured that they die, after which they are difficult to distinguish from twigs killed by brown rot.

Fruit Seldom Injured

The fruit as a rule is not directly injured, although in extreme cases it may crack or blister. On the other hand, there appears to be in many cases a slight irritation or injury to the fruit that causes it to develop an abnormal red color. Where defoliation is severe, the fruit does not develop its normal size or quality, while on girdled branches it usually ripens prematurely and without its normal flavor.

Conclusions

There has been some question during the last few years regarding the cause of the injuries just described. Some thought it was a form of brown rot; some figured that winter injury was the cause of the girdled branches; and others supported the arsenical injury theory. The results of experiments and observations conducted by the departments of plant pathology, entomology and pomology of the New Jersey Agricultural Experiment Station indicate very conclusively that the injury is due to water-soluble arsenic. These extensive spraying and chemical tests have led to the following conclusions:

1. One and one-half pounds of powdered lead arsenate to 50 gallons of water caused very severe injury.
2. The addition of four pounds of hydrated lime to the one and one-half pounds of powdered lead arsenate reduced the injury very slightly.
3. A combination of one and one-half pounds powdered lead arsenate and eight pounds of sulphur flour to 50 gallons of water caused injury just as severe as lead arsenate alone.
4. In dry mix containing eight pounds of sulphur and one and one-half pounds of powdered lead arsenate, the injury decreased as the amount of lime increased. Even with six pounds of hydrated lime, however, the injury was not entirely prevented.
5. Increasing the amount of lead arsenate in a standard dry mix sulphur lime (sulphur eight pounds, hydrated lime four pounds, calcium caseinate eight ounces) from one and one-half to two and one-half pounds to 50 gallons materially increased the amount of injury.
6. A combination of self-boiled lime-sulphur and lead arsenate used at the rate of one and one-half pounds to 50 gallons of mixture caused no injury to twigs or leaves.
7. One pound of powdered lead arsenate to 50 gallons of water caused slight foliage injury and some twig injury.
8. One pound of calcium arsenate to 50 gallons of water caused very severe twig and foliage injury.
9. A combination of eight pounds sulphur flour, one-half pound Kayso and one pound powdered lead arsenate to 50 gallons of water caused injury similar to lead arsenate alone; that is, slight on both foliage and twigs.
10. Standard dry mix without lead arsenate caused absolutely no injury.
11. Two applications of standard dry mix with powdered lead arsenate at the rate of one pound to 50 gallons

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The Blackcap Industry in the Northwest

By W. S. Brown
Oregon Agricultural Experiment Station

This is the second and concluding installment of an article on the blackberry industry of the northwest. The first installment appeared in the May issue. Prof. W. S. Brown, the author, is Head of the Department of Horticulture of Oregon Agricultural College and has made a special study of the blackcap industry.

In the June issue of the American Fruit Grower Magazine, I discussed soils, fertilizers, cultivation, irrigation and pruning and training of blackberries in the northwest. In this article I shall consider the more important remaining factors in the culture of blackcaps.

Pests and Diseases

The black raspberry has its troubles. During the winter, in the mild climate of the Pacific Coast, mice are very apt to tunnel among the roots, sometimes cutting the more tender roots and leaving burrows, which tend to dry out the roots during the summer. These rodents may be poisoned by placing barley or wheat, treated with strychnine, in small tile or on pieces of board covered over like a run-way with tin or wood. Cross cultivation in the spring does much to discourage mice and to break up their nests.

There are not many insect pests which are serious to the black raspberry. The three most important are: The crown borer, the cane maggot and the raspberry saw-fly. The first two of these can be controlled easily by pulling off infested canes, while the third is controlled by spraying with arsenate of lead, two pounds to 100 gallons of water.

Some of the diseases of the black raspberry, on the other hand, are very difficult to control. The anthracnose (*Plectodiscella veneta*) of cane fruits, which attacks the black raspberry, is kept under control as a general rule by pruning out the old canes shortly after they have fruited. After anthracnose has a good start, however, it may be necessary to supplement this pruning by fall spraying and spring spraying with Bordeaux mixture 4-4-50.

Crown gall sometimes does considerable damage to the roots and canes of plants. Whenever it is discovered, it should be immediately rogued out of the plantation—there is no other cure for it.

There are several troubles that have become established within the last few years, which are much harder to control or to eradicate. These are the so-called systemic diseases, which are in the sap of the plant and which go under the various names of mosaic, bramble streak or eastern blue stem, and leaf curl. Observations show that at least all of the ordinary commercial varieties of the black raspberry are susceptible to these diseases. The methods for prevention and control are the same.

First, diseased plants should be carefully rogued out of the plantation. Success will depend very largely upon the thoroughness of the job done. Before such drastic steps are taken, of course, one should be certain that one of these diseases is present. Of course, many times it may be necessary for a fruit grower to call in an expert botanist to determine this for him. If his plants show suspicious symptoms, consisting of crinkly, dark-colored, motley leaves on the young growth, and bluish streaks and bluish spots on the stems, he should send samples of this growth to the pathology department at his experiment station for identification. If the plantation becomes badly infested, it is cheaper to plow out the whole patch and then carefully destroy as many of the roots as possible. A clean cultivated crop such as corn or potatoes, should be grown on this soil for two years at least, and all sprouting roots dug up and destroyed. It will not be safe to plant raspberries upon this soil again until after all the remnants of the old plantation have been absolutely done away with.

Second, clean nursery stock should be used. This advice may be harder to follow than it appears at first, because in some districts it is very hard to find plantations that can be used for growing nursery stock free from disease. Young tips starting from infected plants have the virus in them, even though they may look absolutely healthy at the time of setting. When young plants are healthy, they will remain so indefinitely, unless disease is taken to them from infected plants in the neighborhood. In the eastern part of the United States, a small aphis has been found to carry the virus from infected plants to those not infected. So far, no such action has been found on the part of insects in the Northwest, but it is presumed that some such agency is the cause of the spread throughout the different plantations.

(*Concluded on Page* 32)

June Budding

(*Continued from page 3*)

eaves of a building during the winter months, where they can get sufficient rain and yet be protected from excess sunlight. Although there are several different methods in use for caring for the seeds until time of planting, the above method is about the easiest and generally as successful as any of the others. If the seeds are given the proper care, they will have sprouted by the following spring. When working with seeds having soft shells, such as the almond, it is not necessary to put them through a stratification period. In such cases a preliminary soaking in water for a few hours previous to planting is generally sufficient to cause the seeds to germinate easily.

Preparation of the Soil and Planting

In early spring the ground is plowed and harrowed down to a fine condition. The rows are next laid out as straight as possible. A small plow furrow gives very good results, but in cases where only a few hundred trees are to be propagated, a hand hoe will be found useful. The distance between the rows varies from four to six feet, the former being preferable where the area of ground is limited. Of course, in order to get a large growth in the shortest period of time, it is advisable to place the rows at greater distances for June budded trees than is usually allowed for one-year-old trees. After the rows have been opened up, the seeds are planted at distances varying from three to six inches, depending upon the percentage of good seeds in the lot, which has been previously ascertained by the inspection of a large number of kernels.

Care of the Growing Seedlings

After the plants appear above the surface, the ground should be cultivated sufficiently to keep down weeds and also to keep the soil in good condition. Frequent irrigations are advisable in order to get the maximum amount of growth to take place.

About two or three weeks before budding time, the seedlings should be stripped of their lower branches to a point about five inches above the surface of the ground. This is done so as to give the lower end of the seedling a smooth working surface, free from interfering branches. Seedlings should also be thinned out where they appear to be too close together.

How to Bud the Seedlings

As soon as the seedlings are large enough to receive a bud in their basal end and the bark slips easily, the trees are ready for budding. If the proper scion wood can be secured at this time, it is a good policy to begin budding operations immediately. The common "T" bud is used for June budding, as well as for the standard budding done later in the season. Although this method of budding is probably known to all, a brief review of it will be in order.

Shoots of current season's growth are taken from the desired trees and cut into lengths convenient to handle, usually about 12 inches. The leaves are cut off, leaving about one-fourth inch of the petiole to be used as a handle during the budding operation. These sticks should be always kept in a damp sack to prevent excessive drying. In order to protect the bud from the direct rays of the sun, it is usually placed on the north side of the tree.

A spot on the tree as near the ground as is convenient to work is selected and a vertical cut about one and one-half inches long made into the bark. A horizontal cut about five-eighths of an inch in length is then made across the top of the first cut, completing the "T." The two flaps are then opened and the seedling is ready to receive the bud. In order to remove the bud from the bud stick, the knife is inserted into the bark about one-fourth inch below the bud and then drawn upward so as to cut a slight distance into the wood, emerging about one-fourth of an inch above the bud. The finished bud carries with it a small portion of the wood and about one-half inch of the bark. This type of bud is called the modified shield, and it differs from the true shield bud in that no wood is taken with the latter. The true shield bud requires two cuts, one about three-fourths of an inch in length under the bud and into the wood, and the second, a cut above the bud through the bark. The bud with the attached bark is then ready for inserting. In order to use this type of bud, it is necessary that the bark peel easily from the wood. The advantage of this bud is that a closer contact is possible between the cambiums of the bud and stock. The bud is now inserted under the flaps of the "T" and then closely tied with string or raffia. About 10 days later the strings are cut in order to prevent girdling of the seedling. Up to this point the methods followed more or less coincide with those followed by the ordinary method. However, from this point on the procedures of the two vary.

Care of Trees After Budding

Following the cutting of the strings, the top of the seedling is bent over and broken about four inches above the bud, care being taken not to sever this portion completely. A few strands of bark and wood should be left intact so that some food will be able to pass beyond the injury. The reason for breaking above the bud is to stop a portion of the food supply in the region of the bud and cause it to begin growth immediately. If the entire top is removed at this time, the supply of food may be so great near the bud that it will be "drowned out." After the new bud makes a growth of about four inches, the top of the original seedling should be cut back to within one-half inch of the growing bud, thus diverting the entire supply of food into the new growing shoot. The removal of the top of the original seedling is such a shock to the young tree that it usually has a tendency to throw out innumerable new shoots from all around the bud. In order that the new bud may make as much growth as possible it is absolutely necessary that all such growth from the original seedling be removed.

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Dewberry Growing

(*Continued from page* 5.)

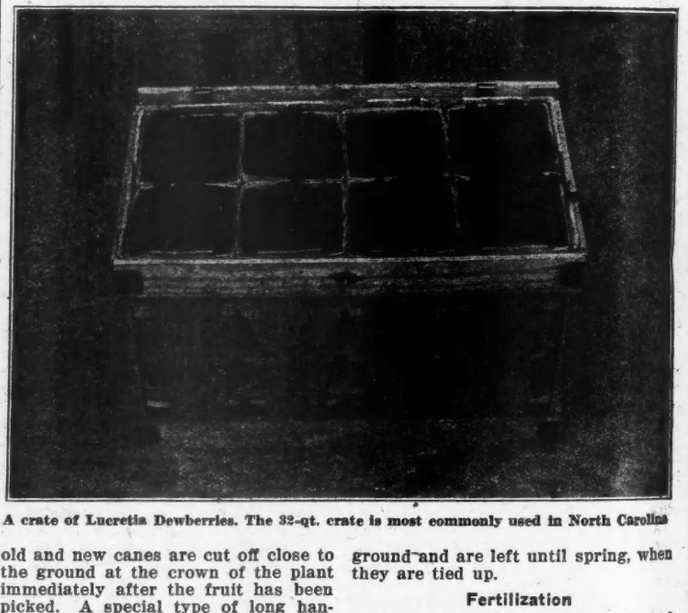
inches square, and should be strong, rigid and durable. Much care should be taken in setting them so as not to injure the crown of the plant. They should be placed at least two to three inches from the center of the crown and driven into the ground so that they will stand in a perfectly upright position. With this system the expense of cultivation is less because the plants are equally spaced in both directions and horse cultivation in two directions can be practiced. Very little hand labor is required. The operation of picking is greatly facilitated, and fewer soft berries result.

One of the most important operations is tying up the plant. The vines are carefully gathered together, coiled around the stake in spiral form, and generally tied at the top and again near the middle. Some growers tie them in three places. The cord used in tying should be soft so as not to injure the canes, and the cord should not be drawn so tightly as to injure the vine. The vines are usually so long that they need to be cut off just above the end of the stake.

The wire method is practiced in those sections where it is impossible to get stakes economically. Generally, the two-wire method is employed in preference to the one-wire method. The first wire is placed about two feet from the ground and the upper wire about five feet. The tying of the plants to the wires is very similar to that described for the stake method. Strong posts are set 40 feet apart in the row, along which No. 9 wire is stretched. With this method cultivation can be practiced in one direction only, increasing the amount of hoeing.

Plant of Lucretia Dewberry trained on stake

In southern dewberry sections the old and new canes are cut off close to the ground at the crown of the plant immediately after the fruit has been picked. A special type of long handled shears is used for this practice. The steel blades curve upward in such a manner as to enable the pruner to cut the canes close to the crown with little stooping. The canes are removed from the field and burned. Cultivation is then started and fertilizer is applied. This induces a vigorous new growth on which the fruit for the next year will be produced. The new canes are allowed to run on the ground and are left until spring, when they are tied up.



A crate of Lucretia Dewberries. The 32-qt. crate is most commonly used in North Carolina

Fertilization

The subject of fertilizers is one of the most important in dewberry culture. If the soil is poor and sandy, large quantities of plant food must be supplied. The use of fertilizers with this crop is governed by the same principles that apply to their use with other fruit crops. The fertilizer prob-

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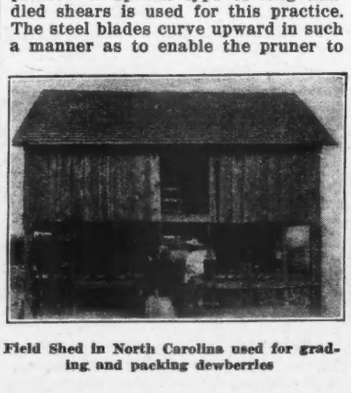
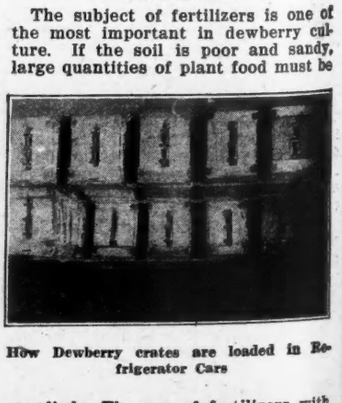


Field Shed in North Carolina used for grading and packing dewberries



How Dewberry crates are loaded in Refrigerator Cars

Spray Injury to Peaches

(*Continued from Page 12*)

resulted in a slight trace of injury not noticeable to the casual observer.

12. Decreasing the lime in dry mix from four pounds to two pounds did not increase the injury when used with one pound of powdered lead arsenate.

13. Injury following the application of calcium arsenate was noticeable in 10 days, while the lead arsenate injury did not show up until three weeks after the first application.

14. One pound of lead arsenate to 50 gallons of spray mixture caused no appreciable injury when used with mixtures in which the lime varied from two to six pounds and the sulphur from four to eight pounds.

15. Lead arsenate in combination with small amounts of lime may under certain conditions cause more injury than lead arsenate alone.

16. Hydrated lime (calcium hydroxide) which has changed to calcium carbonate should not be used with lead arsenate since it tends to increase rather than decrease the water-soluble arsenic.

17. The injury is not due to the water-soluble arsenic contained in the lead arsenate at the time of application, but to soluble arsenic that is formed after the trees have been sprayed.

Recommendations

On the basis of present information drawn both from experimental data and general observation, the following recommendations are made:

1. Lead arsenate alone, or in combination with lime, should never be applied to peach trees during the growing season.

2. Powdered lead arsenate at the rate of one pound to 50 gallons of standard dry mix is the maximum amount that is safe to use on peaches during the growing season.

3. Fresh hydrated lime containing not less than 90 per cent calcium oxide should be used in preparing dry mix. Hydrated lime that has been exposed to the air for several weeks, thus being changed to calcium carbonate, should not be used in preparing dry mix or with other summer fungicides in combination with lead arsenate.

4. Great care should be exercised in weighing or measuring all ingredients before they are put into the spray tank. This applies particularly to lead arsenate and lime.

Spray for Pecan Scab

PECAN trees have bloomed heavily in the Southeast, according to C. H. Blackman, pecan culturist of the Florida Experiment Station, and a good crop is expected. The success of the crop will depend to a large extent upon the treatment that is given for scab, which has become a serious disease.

According to Mr. Blackman, a number of the leading varieties often have their fruit destroyed by scab unless they are protected by spraying. Among these varieties are Schley, Van Beman, Delmas and others. Spraying should begin with a good dormant spray, such as lime-sulphur one gallon to six or eight of water, applied just before the buds start growth.

A good summer spray for scab, and for insects as well, is 4-4-50 Bordeaux mixture, to which one pound of arsenate of lead and one-half pound of Kayso or oil paste has been added. It is extremely essential that the nuts be kept covered with spray material if good control is to be secured. A pressure of 200 to 300 pounds per inch should be used in application. Application should be repeated every three to six weeks throughout the growing season, depending on the frequency of rains. Pecan scab develops rapidly during wet weather.

IN SECTIONS where curculio is a serious pest, the orchards should be kept well cultivated during May and June. Such treatment will largely prevent the summer generation of this pest.

Dewberry Culture

(*Continued from Page 14*)

lem is a local one which each grower must solve for himself.

Usually two applications are made during the year, one in early spring immediately after tying up the plants, and another in summer, usually after the canes have been cut off.

It is generally considered that the spring application has a direct influence on the fruit crop. The canes have already been made during the previous season, and cane growth during the early part of the season is of secondary importance. Growers generally consider that this application should consist largely of potash and phosphoric acid, with a small amount of nitrogen. For the spring application, 500 to 600 pounds per acre of fertilizer, analyzing two to three per cent nitrogen, nine per cent phosphoric acid, and seven to eight per cent of potash, are used in the North Carolina section.

The summer application is made immediately after the vines have been cut off. This application is for the purpose of making canes during the remainder of the growing season which will produce next year's crop. Since nitrogen is the most important element in making cane growth, the fertilizer used at this application should consist largely of this material.

Diseases

Anthracnose and double blossom are the two most serious diseases of the dewberry. They have been combated in the South by cutting off, removing, and burning all the canes immediately after harvesting the crop. Vigorous new canes, free from disease, were then produced. However, in North Carolina during the last few years, anthracnose has been so severe that additional control measures were needed. Plant pathologists found that spraying with Bordeaux mixture would prevent infection of the new vines. Three applications during the season are necessary. The first is given in midsummer when the canes are about 12 inches long, the second the next spring after the plants have been tied up, and the third immediately after blossoming. It is necessary to remove all the old canes carefully so as to destroy the source of infection, and a thorough job must be made of the spraying with the entire spray schedule followed.

The New Chicago Produce Market

(*Continued from page 7*)

foot steel canopies at the rear of the buildings. There will be six large buildings, as shown in the picture, four of which are to be 576 feet long and two 840 feet long. The six buildings will contain 166 stores, each 24 feet wide and 81 feet eight inches deep. The buildings are being constructed of concrete, tile, and brick, and will be fireproof in every way. Each store will have its own elevator, steel stairway, plumbing, and facilities for refrigeration supplied from the central plant if desired. Each store will furnish its own heat for the present.

The inside stores, which number 153, are being sold to dealers on a basis that will bring monthly payments of $460 each. The 12 corner sites were sold at auction and will bring an average monthly payment of about $785 each. These payments will be continued over a period of 198 months, after which the dealers will be in complete possession of their own stores. In addition, during the first 10 years the purchasers will pay 18 semi-annual payments, which will total $471,258 semi-annually. A. E. Welch, President of the South Water Market Trust, states that the monthly cost of the stores to produce dealers will be less than half the net rental now being paid on South Water Street.

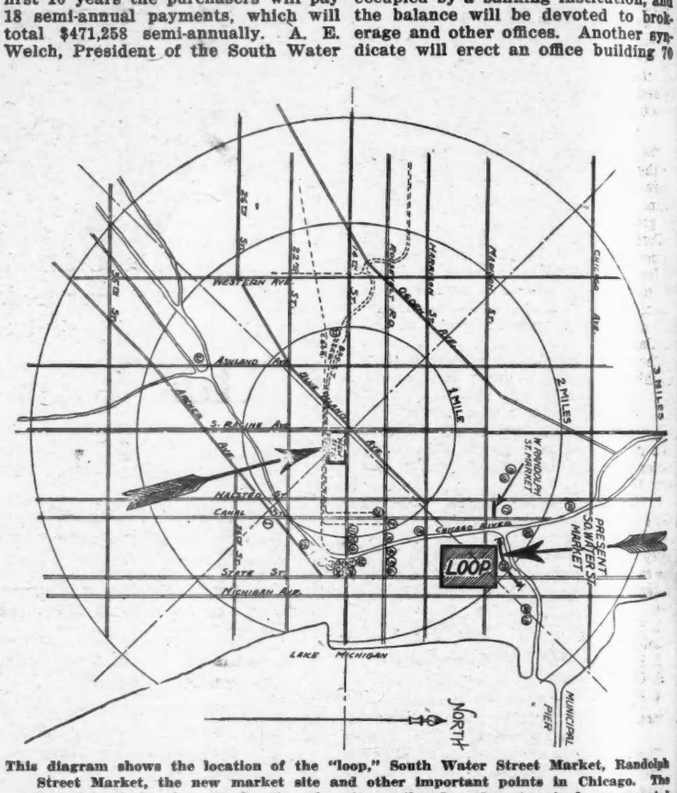
Produce Terminal to Be Developed

In addition to having in charge the construction of the market, the Market Trust is laying plans to develop its own produce terminal. This will be located adjoining the Santa Fe system, within about five miffutes' haul from the market itself. The trust plans to own its own terminal and to operate it completely, including policing, etc. It is reported that the railroads will unite in developing a concentration terminal adjoining the produce terminal. The railroads will unite in delivering cars of produce to this terminal and in receiving therefrom cars intended for outside shipment. This terminal will make it unnecessary to haul produce to the market from such distant railway terminals as the I. C. Buyers who come to Chicago to assemble mixed cars for shipment to smaller markets can very readily make their purchases in the terminal, assemble the various lots in a single car, and have the car shipped to the point desired. Under the present system, the purchase of such mixed cars is a troublesome, expensive and wasteful proposition.

Other Organizations

Besides the Market Trust, there are several other organizations. The Produce Service Trust, a stock organization officered by the same men as the Market Trust, purchased a considerable area of land around the market proper in order to protect the market and to provide sites for other necessary projects. It will resell this land to other corporations, and it will render various services,

The Central Refrigerator Company, which already has bought a site east of the market, will erect a seven-story cold storage and refrigeration plant. A syndicate is erecting a 15-story office building, 103 by 96 feet and costing $1,500,000. The main floor of this will contain shops, the second will be occupied by a banking institution, and the balance will be devoted to brokerage and other offices. Another syndicate will erect an office building 70



This diagram shows the location of the "loop," South Water Street Market, Randolph Street Market, the new market site and other important points in Chicago. The figures in circles show the location of various railroad produce terminals, as operated at present

by 103 feet and five stories high, to cost about $250,000.

The work on the new market was begun in the late winter and is proceeding at a rapid rate. The pictures shown in connection with this article were taken about April 1, and the construction is now much further advanced than at that time. The contractors think the market will be ready for occupancy by July, but the produce dealers are not figuring on fice building 103 by 96 feet and costmoving until about September. In the meantime the produce dealers are conducting business in the old South Water Street market.

Officers and Trustees

The officers of the South Water Market Trust are A. H. Welch, president; F. W. Morf, vice-president; Nathan Lapidus, treasurer, and H. A. Eck, secretary. The trustees are W. B. Clore, Henry E. Coyne, Henry A. Eck, James Gatto, Charles R. Godding, James S. Hall, Nathan Lapidus, George N. Middendorf, F. W. Morf, F. E. Nellis, J. W. Shafton, Harry Snyder, W. L. Wagner, A. H. Welch, Peter Wessles, and A. G. Zulfer.

Cold Storage for Apples

(Continued from page 8)

regularly for building walls 10 and 12 inches thick and with variations in height from six to 12 inches and in length from 16 to 30 inches, the eight and nine-inch heights and the 16 and 24-inch lengths predominating.

Concrete building tile are usually smaller in size and lighter in structure than block, the standard size being five by eight by 12 inches. They are suitable for constructing walls either eight or 12 inches thick, according to the way the unit is turned in the wall. The height of five inches is equivalent to two courses of brick. The air space in tile amounts to 50 per cent or more of its total volume.

Concrete Floors Most Satisfactory

Concrete floors will be found most satisfactory. If it is built to rest on the ground, the floor area is cleared of all loose earth and perishable or organic material. The drainage conditions are important, and if there is any indication that water will not drain off, the floor should be placed on a bed of cinders, around which a drain tile has been placed. If the floor is to be carried on supports above grade, the weight of the floor will be carried on the foundation walls and so designed that it will withstand the loads which may be placed on it.

Insulate All Ground Floors

The insulating of floors which rest on the ground is a question over which there is wide difference of opinion. It seems advisable, however, to insulate all ground floors.

Cork insulation can be laid in the forms before the concrete is poured at less expense than when it is placed on top of concrete slab after this is completed. It also avoids the necessity of laying a wearing floor over the insulation.

The foundation for the refrigeration machinery should be built independent of the floor, as it will need to go to a firm foundation and also so that it will not set up an unnecessary vibration in the building itself. This foundation should be placed before the floor is laid.

In selecting an insulating material, there are certain qualities to be considered. These requirements, with the exception of insulating properties, are the same as for any first-class building material. The points to be considered are:

1. Efficiency in resisting heat-transmission.
2. Permanence.
3. Cleanliness.
4. Fire safety.
5. Strength.
6. Cost.

Amount of Refrigeration Determined by Efficiency

The amount of refrigeration required to hold a room at the desired temperature depends largely upon the efficiency of the insulation, and since good insulation means a daily saving in the cost of operation, it should be considered of as great importance as the refrigerating machinery itself.

Insulating a building is a big factor of cost and for this reason only materials should be considered which are durable and of a permanent insulating value. Many good materials of high insulating value, such as mill shavings, mineral wool, and hairfelt, will lose their efficiency when exposed to the changes in temperature, the loss being caused by capillary attraction, the materials absorbing moisture from the air. They are suitable, however, for partitions between rooms of nearly the same temperature.

Impregnated cork board is manufactured from pure cork screenings with a binding material of asphalt or petroleum pitch. The best impregnated cork contains 95 per cent of cork screenings and is an excellent non-conductor of heat. While it is not fireproof, it has good structural strength and is reasonable in cost. In the manufacture of this board, the cork is not baked but remains in its natural state.

Cork Board Good for Damp Places

These boards are extensively used in places where there is much dampness, such as cellar floors or ice storage rooms. Impregnated cork is often laid over a concrete floor and covered with two inches of concrete as the floor finish.

Compressed pure cork boards are made from pure cork screenings without the use of binding material. The screenings are compressed in moulds and baked in ovens. The heat liquifies the natural gum in the cork and forms a binder for the granules on cooling. Cork boards are manufactured in sizes 12 by 36 inches, and of one, one and one-half, two, three and four inches in thickness.

Windows in cold storage buildings are commonly made stationary and used only to admit light. Joints should be made tight; there should be sufficient sealed air spaces between panes to reduce the transmission of heat through the glass. When the window is assembled, sash and strip should be set with white lead and driven tightly on all sides of the frame. The glass is tacked in place and bedded in felt which has been soaked in white lead and oil. The joints between the frame and wall should be packed with oakum and sealed with asphaltic pitch.

Doors should be hung so that the bottom of the door will swing clear of the floor. A raised threshold is required for the door to close against.

Monolithic Construction for Large Houses

The large storage houses are usually made of monolithic concrete construction cast in a double wall with a continuous air space all around. This really makes a house within a house and is the highest type of construction, but for the smaller plant, where it may be necessary to limit costs, the concrete masonry construction is quite satisfactory.

If the plant is built one story high with a gable roof, it is necessary that there be ceilings in the cold rooms. This is an easy matter. Stringers are placed across, being supported by columns if the area of the ceiling is such as to make support necessary. The upper side of the stringer is covered with a metal lath and with this lath as a ground, it is covered with a mixture of cement and sand such as is commonly used in stucco.

The Editor's Mail Box

White Grubs in Strawberries

AMERICAN FRUIT GROWER MAGAZINE: I am troubled a lot with white grubs in my new strawberry bed. Please tell me how to destroy them.—J. R., Wisconsin.

ANSWER: White grubs do much damage to strawberry beds, particularly when the plants have been set in sod ground. The eggs are laid during May and June about the crowns of the plants. The worms which hatch eat their way into the crown and often destroy one-third to one-half the crown during the summer. If more than one grub is present, the plant will almost certainly be killed. From two to three years are required for the insect to complete its life cycle. The resting stage occurs in the late summer. The adults appear late in the fall but remain in the pupal shells until spring, when they do their egg laying.

It is not a good thing to plant strawberries on sod land, for such land is almost certain to be severely infested with grubs. Sod land should be planted to cultivated crops and thoroughly tilled for a couple of years before planting a strawberry bed.

It is not a good thing to use manure on a strawberry bed that has laid in the open during the previous season. The moths lay their eggs on such manure, and it is therefore likely to be a breeding place for grubs. If such manure is thoroughly composted and turned over several times during the season, this treatment may destroy many, if not all, of the grubs.

After a growing strawberry bed has fruited, it is a good thing to renew the bed by narrowing down the rows with a small plow or cultivator. The mixing of the soil in this way destroys many grubs in the soil near the plants. The burning over of beds after they have fruited will destroy some of the insects as well as the weeds. One author states that spraying in the fall with arsenates will destroy many of the beetles.

Seedling Walnut Trees

AMERICAN FRUIT GROWER MAGAZINE: We have growing near us an English walnut tree which produces excellent nuts. We planted some nuts from this tree several years ago and the trees are now strong, sturdy and tall, but they have never borne any nuts except probably a half dozen hard-shelled nuts unfit to eat. What can we do to make them useful as well as ornamental?—H. R. S., Pennsylvania.

ANSWER: It is not surprising that the English walnut trees which you grew from seed do not bear nuts like those of the parent tree. Most nuts and fruits do not come true from seed. This is because these plants are cross-pollinated, as a rule, under natural conditions. This means that different hereditary characteristics are constantly being brought together. When the new plants begin to produce their reproductive cells, different hereditary combinations are the result, and for this reason a seedling tree rarely produces nuts or fruits like those of the parent variety.

The only way you can be sure to get new trees that will bear nuts like your old tree is to take buds or scions from the old tree and bud or graft them onto seedling roots.

You can make your trees bear nuts like the parent tree if you will topwork the trees with scions from the parent tree. It will take several years to work the trees over into the old variety.

I suggest that you write to the Department of Agriculture, Washington, D. C., and ask for the Farmers' Bulletin describing methods of propagating and topworking nut trees.

How to Kill Quack Grass

AMERICAN FRUIT GROWER MAGAZINE: Please tell me how to get rid of quack grass, which is very bad in this community.—W. R. K., Illinois.

ANSWER: Quack grass has a creeping rootstock which lives from year to year. It is a shallow rooted plant, and it has no tap root. These circumstances provide a means of treatment.

By planting the ground to some crop for a year or two that can be cultivated fairly closely, and by using a surface cultivator, you can practically exterminate the weed. Cultivation should be practiced often enough to keep the quack from making any green growth. Such treatment will in time destroy any plant.

If you can afford to lose a crop, you can destroy quack in one season. Let the quack grow up and cut it for hay about blooming time and *before any seeds form.* At that time most of the strength of the plant is in the tops, and the roots are in the weakest condition of the season.

Immediately after cutting the crop, plow the ground shallow—just deep enough to turn up all the quack roots. Following this, use a spring tooth harrow through the dry season often enough to keep the quack from making any green growth. Cross harrow the land occasionally. The shallow mulch will become very hot and dry under this treatment, and even such a persistent weed like quack cannot long withstand such treatment. This method, properly carried out, will usually destroy quack in one season, particularly if it is a dry season.

Roots Extend as Far as Branches

AMERICAN FRUIT GROWER MAGAZINE: How far out do the roots of fruit trees extend? Do they go out as far as the branches? Is it all right to take away the turf around the trunk and bank the trees with soil? How far away from the trunk should I put nitrate of soda? Do you think I should remove dead limbs when the growth is starting in the spring? —D. E. G., Maine.

ANSWER: The roots of fruit trees usually extend out farther than the branches.

It will do no harm to take the turf away from around fruit trees. As a rule, this will be a good thing for them, unless the ground is likely to wash badly. It is not desirable to bank the trees very high with soil. You should leave them grow at about their normal depth.

Nitrate of soda should be applied out under the branches where the feeding roots lie. There is no need of placing it near the trunks of bearing trees, as there are few feeding roots there.

You can remove dead branches whenever you find them. If you can remove them during the winter, you will not need to disturb the fruit and foliage during the summer. However, if you cannot distinguish all the dead wood during the winter, you can remove such branches early in the spring after the foliage is started.

Child Labor

AMERICAN FRUIT GROWER MAGAZINE: Your magazine is highly instructive and that is my reason for renewing, although I did not agree with your editorial policy in opposing the child labor amendment. While I do not oppose children helping their parents in farm work, I do oppose our present conditions which permit the employment of children in the cotton mills of the South, in the coal mines of West Virginia and Kentucky, and also by the beet sugar growers.—W. E. C., Ohio.

ANSWER: I believe our attitudes on the child labor question are not far apart. The chief difference seems to be in regard to the method of handling the matter. Apparently you feel that the matter could be handled effectively through government regulation. We believe thoroughly in protecting children and we are decidedly against the methods of handling child labor employed by some of the groups you mention. There is no question but what some groups are giving the children unfair treatment.

As to the method of handling the problem, we do not believe the proposed federal amendment would have handled the matter satisfactorily. It

would have added tremendously to taxation, which is already a serious national problem. The amendment was altogether too sweeping in its provisions. Even its promoters argued that the government would never use all the power which might be given it under the amendment. Why give the government power it should never use? It is inadvisable, in our opinion, to delegate such authority to the government. We believe a problem of this kind can be handled most effectively by leaving it to the individual states. If the state is unfavorable toward enforcement of such a proposition, the government will find it very difficult, if not impossible, to enforce the law. However, government regulation of a milder nature than that proposed in the twentieth amendment might prove all right.

We thank you for writing us frankly in this matter and we hope you will not hesitate to write us again frankly about this or any other question.

Pear Tree Blooms Twice a Season

AMERICAN FRUIT GROWER MAGAZINE: I recently found a pear tree which has a habit of blooming twice. First it blooms in April and it blooms again when the pears are about one-third grown. It is a good tasting pear and ripens just after the Bartlett and tastes much like it. What is your opinion in this matter?—G. R., Ohio.

ANSWER: It is rather common for fruit trees to bloom twice a year when they are in very low vitality, and especially when they are nearing the end of their lives. The chief object of nature is to perpetuate the species. It is quite common for plants which are about to die to produce another set of blossoms. This is simply an attempt of nature to mature another crop of seeds before the plant succumbs.

Of course, it is possible that the tree in question is of a strain that habitually blossoms twice a year. I know of no commercial variety or strain having this characteristic. From a practical standpoint, I can see no value in such a strain, for it is quite unlikely that the second set of blossoms will be able to mature fruit.

If the tree produces fruit of value, you can easily propagate more trees by budding or grafting the stock on pear seedling roots.

Bark Beetles on Peaches

AMERICAN FRUIT GROWER MAGAZINE: My peach trees seem to be infested with some insect. The bark has numerous small holes and the gum is oozing out. The branches look rough, particularly in the crotches. Please tell me what kind of insect this is and how to treat it.—C. S., Washington.

ANSWER: From your description I believe your trees are infested with bark beetles. This is a rather difficult insect to control. There are usually two generations a year of this insect.

One of the best methods is to cut out and burn infested branches. Fertilize the trees liberally so they can make a fair growth in spite of the attacks of the beetles. You can destroy many of the insects with washes of various kinds. One of these consists of 10 gallons of thick soapsuds and one pint of crude carbolic acid. This should be applied to the infested branches with a brush.

Another material which has given good results is made as follows: Dissolve three pounds of naphtha in three gallons of water, and heat. While hot, add one gallon of carbolineum and emulsify by pumping a spray nozzle into the material constantly. Add four gallons of water when you are ready to apply the material, and use a spray outfit for application.

The oil sprays are, of course, somewhat new, and I have not had any reports as to their value for controlling bark beetles. However, the oil spreads readily and I see no reason why the oil should not enter the tunnels made by bark beetles and kill many of them. It seems to me that a dormant application of a good oil spray or Scalecide ought to be effective against bark beetles.

Crown Gall on Apple

AMERICAN FRUIT GROWER MAGAZINE: I am sending you a sample of what I think to be aphis. This twig was taken from an elm tree but the insect also appears on apple roots. What causes the knots on the enclosed apple root?—B. S., Kentucky.

ANSWER: I was unable to discover any aphids on the twig which you sent. The knot on the apple root was caused by crown gall, so far as I can determine. This disease is caused by bacteria. Its life history has not been fully worked out.

Crown gall attacks a great many plants. It is often abundant in nursery stock. The bacteria enter the host plant through wounds. The bacteria live over in the soil for several years apparently.

The following precautions will help you to avoid trouble from crown gall. Examine nursery stock very carefully and take every precaution to use only disease-free stock. Plant the stock on land which has not grown a fruit crop infected with crown gall. Avoid injuring the roots and stems of the plants. If any plants become infected, remove them at once. There is no spraying treatment known which has proved of any value in treating crown gall. Some nurserymen dip the roots of their plants in an antiseptic solution, but the benefits from such treatment have not been proved.

Plowing Under Soy Beans

AMERICAN FRUIT GROWER MAGAZINE: Would it be advisable to plow soy beans under in the fall or spring? We had soy beans in our peach orchard two years ago, but cut the crop for hay. Will it be necessary to inoculate if we plant soy beans again this year?—J. C. L., Illinois.

ANSWER: It is necessary to plow under soy beans if you want to secure the benefit from the nitrogen and organic matter carried by them. When you take the soy beans off the land, you remove all the organic matter and you also leave the soil poorer in nitrogen than it was before the crop was grown. Soy beans and other legumes take about two-thirds the nitrogen they contain from the air and about one-third from the soil, under average conditions. This nitrogen is distributed uniformly throughout the root and top of the plant. The soy bean plant is about eight-ninths top and one-ninth root in the dry condition. You can see, therefore, that when you remove the entire top of the plant you take off the land not only the nitrogen taken from the air but some taken from the soil in addition.

Of course, if you take the crop off the land and feed it and take care of the manure and return it to the land, you will secure the benefit of much of the nitrogen and organic matter. If you have animals to which you can profitably feed the crop, it is probably good practice to remove the soy bean crop, feed it to the animals, take care of the manure, and return it to the land.

If you have had good stands of well inoculated soy beans on the land, it will be unnecessary to reinoculate the land for at least four or five years following.

Man is but a worm. He comes along, wiggles a little in the dust, then some chicken gets him.

Small Fruit Culture

(*Continued from page 11*)

though favored by climatic conditions, has several unusual pests with which to contend. In addition to the usual leaf spots, mildews and borers, there are two minute animals attacking berry bushes which are difficult to control. The more serious one is the red spider. This pest attacks berries of all kinds, as well as orchard trees. It sucks the sap from the leaves and often defoliates the plants. In serious infestations, the fruit dries up and cannot be harvested. On orchard trees red spider may be controlled with some success with finely divided sulphur. On berries, however, sulphur is like some of the old-fashioned remedies for humans which remind one of the trite expression, "The cure is worse than the disease." No form of sulphur applied either as a dust or as a spray has as yet been found which does not burn strawberry or raspberry foliage when applied in sufficient quantities to kill the spiders. The only other alternative left to the grower is to irrigate regularly and heavily to induce a thrifty growth. Red spider damage as a rule, is less serious on plants with plenty of soil moisture than on those which have been allowed to suffer for lack of water.

Blackberry Mite Controlled with Lime Sulphur

The other serious pest is known as the blackberry mite. This microscopic animal produces a condition on some blackberries, particularly the Himalaya, known as "Red Berry." Only a portion of the berry matures normally, the rest of the drupelets remaining hard and red. This condition puzzled growers and experiment station men until, quite by accident, an extremely small mite was discovered working on the little stems of the individual drupelets. This tiny animal is so small it can hardly be distinguished with the aid of an average hand lens. As the blackberries are not as subject to injury by sulphur as the raspberry, a spray program was quickly devised which effectively controls this pest. Two applications of lime sulphur solution are applied. The first, at winter strength, is put on late in February, and the second, at summer strength, is applied when the blooming period is nearly completed.

Currants and gooseberries are only grown to a limited extent. These fruits do not seem to be adapted to the interior sections and grow best in the cool coast districts. The current bushes are usually grown in tree form with a single stem. The currents are sold on the fresh fruit markets in baskets containing about five pounds, while practically all of the gooseberries are sent to the canneries.

June Budding

(*Continued from page 13*)

This will necessitate frequent trips through the nursery for rubbing off this type of growth.

With sufficient care, and frequent irrigations when the soil becomes dry, it is often possible to get a growth of from three to four feet and a diameter of about one-half inch, all within a relatively short period of time. However, it is not possible to get all trees to attain such a size. Nurserymen usually offer trees about 12 inches in height and one-fourth inch in diameter as their lowest grade. Although good results may be secured from these small sized trees, it is usually better to plant those which are of a slightly larger caliper.

Dig the Trees Carefully

The trees are generally dug in time enough so that they can be planted in the orchard as soon as there is sufficient moisture in the soil. As previously mentioned, the utmost care must be taken when removing the trees from the nursery and when planting in the orchard, owing to the fact that the June budded trees are somewhat more delicate at this age than standard budded trees.

THE STATE of Indiana has recently enacted a co-operative marketing act similar to the acts which have been passed in a large number of other states. The law provides that members of co-operative associations may place crop mortgages upon their crops but that such mortgages shall be subordinate to the right of associations to take delivery of the crops covered by their contracts and that in such cases the mortgagees shall serve proper notice upon the association and that the proportionate proceeds due or payable to the grower shall become subject to the mortgage held by the mortgagee. In case the amount thus received is insufficient to pay the mortgage, the grower is to become liable for the balance.

This provision adds a new feature to co-operative laws as passed by many other states. It is the result of experiences met by co-operative associations the last couple of years. It seems to be a fair and reasonable addition.

This is Indiana's second attempt to pass a co-operative law. Two years ago a law was passed by both branches of the legislature but it was then vetoed by Ex-Governor McCray, who is now serving time in the federal penitentiary at Atlanta.

CO-OPERATION is growing steadily in South Africa, according to a report of the Minister of Agriculture. About half the farmers of the country are members of some organization. Few belong to more than one society. The Co-operative Act of 1922, which was framed after an investigation of the co-operative laws and organizations in other countries, has proved to be a sound and helpful law. The Department of Agriculture makes investigations pertaining to the need for and prospects of any proposed organizations and when conditions show that such an organization will probably prove unsound or dangerous to the movement, registration is refused.

During the year previous to June 30, 1924, 106 new societies were registered. There are now a total of 243 producers' and consumers' co-operative societies in South Africa, including 44,715 members.

There are co-operative marketing associations for handling a large variety of agricultural products. There are also insurance societies, trading and purchasing societies, and several federal exchanges. The Fruitgrowers' Union was described some time ago in these columns. Of several societies marketing dried fruit, the largest last year sold 4,785,178 pounds, an increase of over a million pounds above the sales of the previous year.

A SALES and demonstration store at Atlantic City is to be opened by the department of fresh fruit drinks of the California Fruit Growers' Exchange. A 17-foot frontage has been obtained in a conspicuous place adjoining the boardwalk.

The store will be in charge of Mr. Croasdell, who has been handling Sunkist extractors in Pennsylvania and other eastern states the past few years. The store will handle fresh fruit orangeade and lemonade, and it will be a show and sales room for Sunkist electric extractors and Sunkist fountain units.

The store will have a double purpose. It will offer an excellent opportunity to bring fresh fruit drinks, and particularly citrus drinks, to the attention of large numbers of people from many communities. Since Atlantic City is a mecca for concessionaries in search of ideas and also a convention city, the store will offer a means of making contracts for prospective purchasers of extractors and fountains.

ACCORDING to Manager Dezell of the California Fruit Growers' Exchange, the supplies of oranges from states other than California have increased 135 per cent during the past five years. Of a total citrus acreage of 253,570 in Florida, 25 per cent is yet to come into bearing. Most of this fruit will be marketed during the California navel season.

Over-production is recognized by Mr. Dezell as one of the big problems of the citrus industry. With this in mind, Manager Dezell is recommending that members of the California Fruit Growers' Exchange take steps to increase the strength of the organization to the end that the association may exert an influence in conservative planting of citrus fruits and in developing better methods of marketing, handling and distribution of the products.

ARTICLES of incorporation have been filed for the Ventura County Citrus Exchange in southern California. The organization includes six groups, as follows: The Santa Paula Citrus Fruit Association, the Mupu Citrus Association, the Oxnard Citrus Association, the Ventura Citrus Association, George C. Power, and the Rancho Sespe. Growers of this group some time ago selected a committee to consider the matter of organization as part of the California Fruit Growers' Exchange, and the filing of incorporation papers has resulted.

THE OREGON Growers' Co-operative Association has been liquidating since last fall and has on hand about a dozen packing plants at various shipping points in Oregon. It is necessary to sell these plants before the association can pass out of existence. The demand for these plants at present is said to be not very active. The association has on hand about 20 tons of dried loganberries. Practically all other assets have been disposed of.

CO-OPERATIVE marketing has recently won a fight in North Carolina by overwhelming odds. One legislative bill, supported by warehouse interests, would have deprived the co-operatives of the right of injunction against contract breaking if it had passed. It died on the Senate calendar. Another bill, which would have permitted members to withdraw from their contracts, was killed by tabling. Only two votes were cast against tabling.

North Carolina has been a source of strife against co-operative marketing the past year. The United States Senate recently ordered an investigation of the interests which are boycotting and opposing the tobacco pools. The investigation is now being conducted by the Federal Trade Commission.

AS STATED previously in this department, the California Peach and Fig Association has been undergoing reorganization the past few months. The plans of the committee of 38 provided that a control of 80 per cent should be received before the contracts became effective. It was found, however, on the closing day

that only 53 per cent of the peaches and 68 per cent of the figs had been contracted. It was expected that a number of contracts which came in at the last moment would increase these percentages somewhat.

It was voted unanimously by the committee to continue with the reorganization plans and to establish a marketing organization even though the contracted tonnage fell below expectations. It was recognized that the association would under these conditions be compelled to operate on a strictly competitive basis and that it would be unable to take advantage of the gains which come from large control over a commodity.

The contracts provided that in the event that 80 per cent control was not obtained, the growers were to have the privilege of rescinding their contracts. The committee of 38 voted unanimously to send out the waivers so as to give opportunity to withdraw to those growers who may desire the same. It was expected that only a few growers would take advantage of the waiver privilege.

THE ANNUAL report of the California Fruit Growers' Exchange shows that 6.86 cents per box covered the average operating cost of the association in marketing citrus fruits handled by the association during the 1923-24 season.

THE SKOOKUM Fruit Growers' Supply Company was recently incorporated at Wenatchee, Wash., as a subsidiary of the Skookum Packers' Association, Inc. The association is a capital stock corporation, organized on a non-profit basis. Its purpose is to buy supplies for the shippers of Skookum apples. The Skookum Packers' Association has done a limited amount of buying in the past. All future purchases will be made in the name of the supply company, which is organized along practically the same lines as the Fruit Growers' Supply Company of California, the purchasing organization for the California Fruit Growers' Exchange. Twenty local units of the Skookum exchange hold stock in the supply company. The offices of the two organizations will be combined and the packers' association will have a voice in the affairs of the supply company. The new company has already made some purchases for shippers.

THE GROVELAND Citrus Growers' Association of Groveland, Fla., is planning to erect a new packing house. The directors are inspecting packing houses throughout the citrus district so that they can incorporate the most modern features in the proposed new plant.

THE HAINES City (Fla.) Citrus Growers' Association is planning to build a new packing house on a five-acre tract it has recently purchased north of its present property. The increased volume of fruit has made it necessary to enlarge the packing facilities.

"AS I HAVE stated," the normal price of any commodity is largely determined by the cost of production. For men will not long continue in any undertaking at a financial loss to themselves. The problem is to keep the market price as near the normal price as possible. Now, in the making of the market price, the bargaining power of the buyer and of the seller plays an important part. Unless there is something like equality of bargaining power upon the two sides of every sale, the price resulting is likely to depart widely from the normal price. Why is it that the farmer in marketing his products has suffered most? An organized army is many times as powerful as an unorganized mass consisting of the same number and the same quality of individuals. Those forces of society representing the purchasers of farm products in the main have become highly organized while the farmers have made less progress in that direction than any other large body of our citizenship. They are therefore at a tremendous disadvantage. In other words, their bargaining power has diminished almost to the vanishing point. Indeed, in a vast majority of instances they do not assume even to name a price but content themselves with taking whatever the buyer offers. Now, there is but one way by which the farmer can regain something of equality in his bargaining power, and that is through organization. This is coming to be recognized more and more in the great business world.

"In a recent bulletin issued by the American Exchange National Bank of New York, we find the following:

"'It is obvious that the chief handicap under which farmers are forced to work arises out of the fact that all other branches of industry have reached relatively advanced stages of organization, through which they have gained advantage over farmers in bargaining power as well as in general economy of operation. The difficulties which confront efforts at the effective organization of farmers are admittedly great.'

"And then the bulletin goes on to enumerate some of these difficulties. It concludes: "'It is nevertheless apparent that the only solution of the farm problem that is consistent with the institutions of our country lies in the direction of effective organization."—*Hon. Frank O. Lowden.*

Orchard Survey in Virginia

AN ORCHARD survey covering practically all orchards of over 100 trees has recently been completed in Virginia. It was made under the direction of the State Bureau of Statistics, which is associated with the Virginia Department of Agriculture. The Extension Division and the State Department co-operated in the work. The survey shows the age and variety of the trees in practically all of the commercial orchards of the state. It is expected that the survey will prove of great help in the future development of the fruit industry in Virginia.

THE STRAWBERRY season has been running about two weeks earlier than during 1924, or about the same as in 1923. Reports from several sections indicate fair-sized crops and good quality fruit. The prospects in Missouri and Arkansas have been especially favorable. The acreage is somewhat above that of last year, and the condition of the vines has been better. It was expected a short time ago that 1200 to 1500 cars would be shipped from southwest Missouri, compared with 990 in 1924. Shipments from east Tennessee started shortly before May 1. The Tennessee acreage was considerably less than in 1924, and weevils did some damage in the eastern part of the state.

Growers in Louisiana had a successful season. The f.o.b. price ranged around $5 a crate, making a carload worth $3600. The peak movement took place April 25 to 30. Cool nights kept the berries from ripening too fast. Prices became somewhat lower at the close of the season, due to competition from other states and cool weather.

North Carolina Klondikes brought growers $8.50 to $9 per 32-quart crate. Opening prices in May of 1924 were around $5. A crop of 1600 cars was predicted for North Carolina, or 400 less than last season.

THE 1925 strawberry season has proved very profitable to the Tangipahoa, Livingston and St. Helena parishes in Louisiana. A total of 431 cars had been moved to April 12 and receipts amounted to over $1,500,000. Many were predicting receipts of about $4,000,000 to $5,000,000. Some growers who have used the double-row system were expecting a gross return of $1000 per acre. Some of these fields were expected to produce 300 24-pint crates to the acre.

The first car was shipped on March 11, about two weeks earlier than in 1924. No frosts proved damaging. The first car sold at $6 per crate f.o.b. track and the average daily price during the first month was around $5.

The heaviest day's movement to the middle of April was 41 cars on April 4. Daily shipments amounted to 10 to 25 cars, which was not sufficient to over-supply the northern markets. Cool nights delayed the ripening and caused the berries to carry better in transit.

It has been found that plants brought into the state from other states are slower to come into bearing than home-grown plants. It is expected that such stock will require at least a year's growth in Louisiana before it will become acclimated to the conditions there.

In Louisiana the strawberry plants are set out each year, usually during August and September. Continued drought in the fall of 1924 caused some plantings to be made as late as January. The yield from these late plantings was relatively low. The dry weather last season caused the installation of many artesian wells for irrigation. Irrigation was practiced during the ripening time to counteract drought. Practically all fields were heavily mulched with pine needles and few sandy berries were obtained.

Practically all the Louisiana berries are shipped by express. Growers pool shipments through associations and each association ships under its own brand. State inspectors examine each load at the car door. The cars are usually billed to Mattoon, Ill., where they are diverted to other markets.

The growers are profiting from the method of marketing developed during the past few years. Each evening the selling organizations hold an auction at Hammond, which is attended by at least 50 buyers from the large cities. An auction list is furnished each buyer, showing the number of each car, the number of crates contained, the method of loading, and the different brands making up the load. Buyers also visit the packing sheds during the day so as to acquaint themselves with the kind of stock that will be offered for sale that evening. The cars are paid for after the auction and the growers receive their money the day following. Growers may also attend the auction and by consulting the list they may know exactly the price for which their berries sold. It is said that the conditions for operating this auction system at Hammond are ideal.

THE NEW JERSEY State Horticultural Society has proposed that roadside markets be standardized and supervised by the New Jersey Bureau of Markets. The plan has been sanctioned by the state bureau and rules will be promulgated at once.

It is proposed that the inspection and standardization be voluntary in its nature. Growers who meet the requirements will be permitted to use the legally protected term "New Jersey Standard Farmers' Roadside Market." The rules were adopted at a conference called by the horticultural society, at which growers, agricultural and marketing officials, county agents and representatives of the State Department of Highways and Health were present. The rules require that the market be owned by a farm operator, that at least 70 per cent of the produce offered for sale shall be grown on his own farm, and that the average grade of products must be good. The market must also meet certain requirements as to location. The cost of the service must be met by fees paid by the applicants.

This movement is a step in the right direction. The roadside marketing privileges have been greatly abused in many instances and this has tended to discredit the entire system in the eyes of many buyers. A system like that to be instituted in New Jersey will help greatly to keep the roadside markets on a high plane and will undoubtedly help to maintain and increase their popularity among high-class buyers. The New Jersey idea originated at the convention of the horticultural society held last winter.

J. A. BARRON, the popular manager of the Fennville (Mich.) Fruit Exchange, recently sent out a most interesting letter to members of the association. In this letter Mr. Barron called particular attention to the large number of varieties of apples being grown by members. A total of 77 varieties is listed in the letter. According to the deliveries by members in 1924, 39 of these varieties produced a total of 66,699 crates, while the remaining 38 varieties produced a total of 6530 crates.

Mr. Barron recommends that the 38 latter varieties be eliminated by growers during the next four or five years. He believes that 14 of the 39 superior varieties could be eliminated to advantage in due time, thus leaving 25 varieties. Lower packing costs and better sales would result from such a program, in the opinion of Mr. Barron. He lists eight varieties which should be emphasised in future plantings.

The conditions at Fennville with respect to varieties are like those in

many apple sections. Altogether too many varieties are being grown. By cutting down the number to as few as possible, and by concentrating on those best adapted to local conditions and which have good marketing characteristics, much better marketing results will be secured. This problem is of equal importance to growers who market individually and who market co-operatively.

A BILL is pending before the Florida legislature pertaining to the shipment of green and immature fruits. Its passage is expected at any time.

The original bill has been redrafted by a joint committee of the Senate and House so as to insure its constitutionality. At a recent public hearing, the provisions were thoroughly discussed by fruit men from all parts of the state. No opposition developed.

Senator E. J. Etheridge is promoting the bill in the Senate, while W. A. MacKenzie is handling the measure in the House.

The proposed law has been approved by more than 80 per cent of the citrus interests of the state. If passed, it will eliminate the old method of judging citrus maturity by color. It fixes standards which require oranges and grapefruit to have a sufficient sugar and juice content before being shipped. A rigid inspection force, which will operate under the direction of the Commissioner of Agriculture, is provided for in the bill. The expense is to be met by a tax of one and one-half cents on each box of fruit handled between September 1 and November 26. The danger season is practically past at the latter date.

THE PENNSYLVANIA Bureau of Markets recently completed a survey of the carlot unloads in 15 large cities of the state. The 15 cities investigated received in 1924 6873 cars of apples, 94 per cent of which were furnished by seven states, as follows: New York, 2496 cars; Washington, 1982 cars; Virginia, 652 cars; Pennsylvania, 519 cars; Delaware, 387 cars; West Virginia, 217 cars; and Maryland, 189 cars.

About the same proportions of eastern and western apples have been used by the state in the past three years. Since 1922 Pennsylvania and the adjoining states have supplied two-thirds of the cars shipped into the surveyed 15 markets. The Keystone state has ranked third for several years as a source of carlot apples used in its own larger markets, but in 1924 Virginia took this position.

Pennsylvania shipped 519 cars into its own markets in 1924, three-fourths of which were used in Philadelphia, Pittsburgh and Scranton. The United States Bureau of Agricultural Economics reports that 1917 cars of apples were loaded in Pennsylvania for shipment last year. It is apparent, therefore, that about 1400 cars of Pennsylvania apples went to outside markets. Among the principal outside users of apples from Pennsylvania are the southern states, New York and foreign ports.

Philadelphia and Pittsburgh used 84 per cent of the 6873 cars entering the 15 markets studied. Philadelphia obtained 40 per cent of its apples from Washington last year. Over half of the apples used in Pittsburgh came from the state of New York.

SHIPMENTS of oranges and grapefruit from Florida during the current season, on May 1, totalled approximately 16,618,000 boxes, according to records on the state's citrus movement compiled by the Florida Citrus Exchange statistical department.

Estimating the state's citrus production for the season at about 19,000,000 boxes, which most fruit men agree is a reasonably accurate figure, shipments made thus far represent about 87 per cent of the crop.

Florida orange shipments, on May 1, totalled about 9,487,080 boxes, or 1,315,800 boxes less than shipments up to the same date last year. Grapefruit shipments, on May 1, totalled 7,131,240 boxes, or 764,640 boxes more than the movement in the corresponding period last season.

Shipments of citrus fruit leaving Florida on boats thus far this year total 552,240 boxes, of which two-thirds were grapefruit and one-third oranges. This figure does not include rail shipments to Atlantic ports which were forwarded to Europe by boat. Florida Citrus Exchange shipments, thus far this season, are reported to be more than 25 per cent greater than they were at this time last year.

MIMEOGRAPHED copies of the latest reports from Edwin Smith, representative of the Federal Bureau of Agricultural Economics, who is now in Europe, can be obtained from the Foreign Section, Bureau of Agricultural Economics Library, Washington, D. C. The series of reports on apples in Europe are designated: F. S.: A-10, "The Distribution of American Apples Through Liverpool" (April 11); F. S.: A-11, "Glasgow as a Primary Fruit Market" (April 11); F. S.: A-12, "Slack Barrels of Apples in Export Markets" (April 14); F. S.: A-13, "Effect of Panama Canal Shipments on Apple Prices in Great Britain" (April 14); F. S.: A-14, "Price Levels of Apples in Great Britain," (April 18).

A series of reports by Mr. Smith on the citrus fruit situation in European markets are available as follows: F. S.: CF-2, "Spanish Oranges Running Poor in Quality" (March 7); F. S.: CF-3, "Market for Grapefruit in Great Britain" (March 12); F. S.: CF-5, "Marketing Citrus Fruits in Scandinavia," (April 7); F. S.: CF-6, "Marketing Citrus Fruits in Germany" (April 7); F. S.: CF-7, "The Grapefruit Market in Europe" (April 10).

THE RAPID growth of the fruit industry in the United States during the past few years is shown clearly by the carlot shipments. According to figures collected by the Department of Agriculture, more than 450,000 cars of the 17 leading fruits were shipped in 1923, as compared with 346,000 in 1920. The growth of shipments has been most marked in the case of apples, oranges and grapes. Shipments of apples increased from 109,000 cars in 1920 to 134,000 in 1923. Orange shipments increased from 50,000 cars in 1920 to 76,000 cars in 1923. Of grapes there were 41,000 cars shipped in 1920 and 65,000 cars in 1923.

THE WHOLESALE produce market of Newark, N. J., is being moved. The new market occupies an entire block and part of another block. There is plenty of room for expansion. The produce stores are uniform in size and style. Each has a 25-foot front and a depth of 68 feet. There is plenty of light from both front and back and the walks are wide. Most of the stores have elevators.

In each store there is storage space for two or three cars of produce. A cold storage plant is to be built within a block of the market. There are accommodations for about 80 dealers, and there is space for 100 farmers at one end of the double row of produce houses. It is expected that adequate railroad facilities will be developed within a reasonable time.

The old market was located in a down-town section of Newark where rents were high and congestion was great. The need for increased space practically forced the moving of the market to the present location.

Newark has a population of about 500,000 and supplies about 1,000,000 people with foodstuffs. The city uses 20,000 cars of fruits and vegetables a year, which makes it an important consuming center, as well as a terminal market. The new market started operations April 1.

Good Intentions

Mose: "Say, Sam, how you all gettin' on with youah saxophone?"

Sam (slowly and sadly): "Mose, ah cain't jus' unnerstan' it. Ah blows in de sweetes' noises you ever heered, but the mos' hell of a blah always cum out th' othah end."—*Princeton Tiger.*

Summary of Fruit Prospects

By C. E. Durst

IN THE May issue of the American Fruit Grower Magazine a summary of fruit prospects was given. This summary was compiled from reports received from authorities located in the different fruit sections. Many favorable comments were received in regard to this summary. We are presenting another summary this month, which was prepared in the same way as that of last month. While weather conditions may still change the prospects in the more northern localities, the summary given this month is a much more accurate statement of the conditions existing at the close of the blooming season than was possible a month ago.

The date in parenthesis indicates the date on which the report was written. The name of the person making the report is given at the end of the report for each state.

Massachusetts. (May 8)—The conditions are much the same as reported last month. The freeze on April 21 damaged cherries rather badly. The central blossom of many apple clusters was killed, but the chances are good that enough of the remaining blossoms will set fruit to insure a crop. Peaches and plums seem to have come through all right.—*F. C. Sears.*

New York. (May 8)—It is too early to give definite information regarding fruit prospects. Peaches were injured by winter killing and the crop may be reduced. All other fruits survived in good condition. Reports indicate that Baldwin, our leading apple variety, is showing an abundant crop of blossoms and that the average is very good for other standard fruits. All fruits are blooming 10 to 14 days ahead of their season, and there is still considerable danger of frost damage.—*U. P. Hedrick.*

New York Hudson Valley Section. (May 5)—Sour cherries and peaches are now dropping their petals. Most pears are in full bloom and apples are in the cluster bud stage. Sweet cherries, pears and peaches bloomed full. Sour cherries were injured appreciably by the recent cool weather. Indications still point to an abundant bloom of McIntosh, Baldwin, Greening, Northern Spy, Delicious and Wealthy apples. There are no signs of serious outbreaks of scab or aphis, such as was the case in 1924.—*H. B. Tukey.*

Virginia. (May 4)—The season has shown abnormally sudden changes in temperature. The damage to apples from frosts in the low-lying valleys and in the northern part of the state has been rather serious. In some cases a total loss has resulted. High-lying orchards have not been severely damaged. One county reports the damage more severe on western and southern slopes than on others. In some orchards 80 to 90 per cent of the crop has been killed in low places, while on higher land the fruit was uninjured.

Peaches promise to yield about half as good a crop as in 1924.

On the whole the fruit situation still looks encouraging. I am inclined to believe the damage has not been as great as feared by some and that our crop on the whole will be better than it has been for the past few years.

A continued drought was broken last week by a soaking rain.—*F. A. Motz.*

West Virginia. (May 5)—The frost of April 21 did considerable damage to apples in the eastern Panhandle, in lower locations and pockets. Reports indicate from one-half to two-thirds of an apple crop in this section. Little damage was done west of the mountains.

In some sections where peaches escaped winter injury, the crop is now practically a total loss.—*M. J. Dorsey.*

North Carolina. (May 5)—Fruit prospects are very promising at present. A full crop of peaches is expected in the sand hill section in the south central part of the state where peaches are largely localized. Shipments of 2500 cars are expected.

The apple industry is confined to the western part of the state and there is promise of a full crop at present.—*C. D. Matthews.*

Georgia. (May 4)—The danger from frost is now past. The April-May drop is not yet complete. The prospects are very encouraging. The season is about two weeks ahead of that of 1924, which was a very late season.

Mayflowers will start moving in carlots about May 11 to 16. Most trees of this variety have been pulled up. Uneedas will start the last week in May. The crop is good; although many trees have been pulled up. Early Rose will start the first week in June and Carmen about the second week. The crop of the latter is light.

Hileys will be our heaviest crop and will begin moving about the third week in June. The Georgia Belles will start about the third week in June and Elbertas should start about July 1. There is a good crop of Elbertas on young trees but the older trees have a light crop.

The drop has been heavy on all varieties due to increased curculio infestation because of the mild winter. The peach crop will probably be from 10,000 to 12,000 cars.—*O. I. Snapp.*

Florida. (May 5)—Florida has had no injurious spring frosts. The citrus bloom has been scattered and irregular and is yet only 85 per cent of normal. Attacks of the citrus aphid have been much more extended than in 1924, when it first became a serious pest. Control methods are being developed and extended.

Peaches and pears promise good crops. Avocadoes, bananas, mangoes and limes in southern Florida are in normal condition and the outlook is good.

Early bunch grapes are growing in importance. More fruit will be marketed this year than last and the crop is now especially promising. Blueberries in west Florida have increased in acreage and are in good condition.—*W. L. Floyd.*

Alabama. (May 8)—The past winter has been normal and no damage was done to our Satsuma oranges. The trees have set a very heavy crop, but dry weather during the past six weeks has caused much dropping of fruit. If rains come within the next two weeks we will have the largest production of Satsumas we have ever had. A systematic spraying program is being carried out to control scab and melanose. —*O. E. F. Winberg.*

Kentucky. (May 6)—Growers in general are optimistic about prospects. Some growers report a 100 per cent set on all varieties. Others report a poor set. The Winesap, our leading variety, shows a perfect set in some places and practically a failure in others. Dry weather during blooming time and blight are probably responsible for the failures. Transparent, Early Harvest, Stayman, Jonathan, King David, York, and Rome Beauty apples show a good set on the whole. Delicious promises about half a crop. —*W. W. Magill.*

Arkansas. (May 6)—A large crop of most varieties of apples is in prospect. The Ben Davis, Jonathan and Grimes generally have a good set. Winesap shows a light setting, but the per cent of Winesap trees is low. One of the largest apple crops this section has known is in prospect.

There will be a heavy crop of grapes. There has been some frost injury in low places, but this seems to have been comparatively light. Sour cherries and blackberries promise a good crop.—*J. R. Cooper.*

Missouri. (May 5)—Apples and pears have set well and a full crop is in prospect. Fire blight is prevalent in all sections but has done no material damage as yet. A fair peach crop is in prospect in central and southern Missouri, although in the main peach district in Howell and Oregon counties, low temperatures at blooming time practically destroyed the crop. The prospects are good for grapes, blackberries, raspberries and dewberries.—*T. J. Talbert.*

Michigan. (May 4)—The fruit prospects have not changed materially during the last month. There are still indications of a good crop in all of the commercial districts, although the danger from spring frost and bad weather at blooming time is not yet past.—*V. R. Gardner.*

Illinois. (May 10)—Prospects for peaches are good in extreme southern Illinois. The buds were destroyed by winter freezes in the Centralia district and farther north. Prospects for apples are good all over the state. Some damage has been done by late spring frosts in the northern part of the state to cherries, plums, apples and strawberries.—*A. B. Leeper.*

Minnesota. (May 5)—At present the prospects are good for a fruit crop. We are having a heavy apple bloom both in well managed and neglected orchards. Apples are in bloom in the southeastern part of the state. Plums are showing an excellent bloom, but cool weather and light frosts recently may have injured the set. Bees have worked nearly every day and I am hopeful that with good weather in the future we shall still have a good crop of apples and plums.

Small fruits look good. Strawberries and raspberries were winter injured to some extent but the damage was not great. The gray bark or spur blight disease of raspberries is becoming serious and may compel us to begin spraying.—*W. H. Alderman.*

Colorado. (May 7)—The apple crop is safe to date and we are practically out of the danger period. The crop promises to be normal with the exception of a small area in northern Colorado. The western slope of the state will have a good crop of apples.

Peaches suffered about 50 per cent loss by frost the last week in April. The crop will be around 800 carloads, most of it coming from the Palisade section and the North Fork Valley around Paonia.

The apricot crop will be about 50 per cent of normal and the sweet cherry crop about 75 per cent. The sour cherry crop north of Denver and in the Arkansas Valley was damaged to the extent of about 50 per cent on April 27.

The pear crop promises to be normal. The condition in the state as a whole is below the average. There is considerable apprehension as to the supply of water for irrigation, due to the light snow-fall in the mountains.

The scarcity of water may cause some fruit to be small and inferior. We are fully three weeks ahead of the normal season, and the weather has been unusually dry and the rain-fall below normal.—*E. P. Sandsten.*

Texas. (May 7)—Texas fruit conditions continue to be good and all indications point to a heavy crop. The long continued drought has been broken in most sections and if favorable weather continues we shall have a heavy crop of fruits and vegetables throughout the state. Insects are reported to be especially numerous in some sections.—*A. T. Potts.*

Utah. (May 6)—The past winter was the coldest since 1888, the temperature going down to 38 degrees below zero Fahrenheit.

Some trees were entirely killed.

Peaches will be almost a total failure. A few isolated orchards near the mountains almost escaped injury. In most orchards the trees were injured and the crop destroyed.

Most sweet cherry blossoms were killed. There will be a normal crop of Lamberts. Sour cherries have been uninjured. There will be about half a crop of apricots. The plum crop promises to be normal. Apples promise almost a full crop. Pears will produce not over half a crop, the flowers having been injured during the blooming period. Practically all of the uncovered Vinifera grapes were killed. The American varieties will likely produce a full crop. All dewberries above the snow line were killed. Where the snow was deep, there will be almost a full crop. There will be practically a full crop of blackberries, raspberries and other small fruits.—*L. S. Morris.*

California. (May 5)—Conditions are similar to those reported a month ago. There have been no general frosts. Losses have been suffered by pear growers in the Sierra Nevada foothills. At elevations around 2500 to 3000 feet temperatures ranged as low as 19 and 20 degrees in some localities.

The Gravenstein apple crop in Sonoma County is much below the average, due to unfavorable weather during the blooming season. The apricot crop is only 60 per cent of normal and the peach crop is probably not up to the average.—*W. P. Tufts.*

Oregon and Washington. (May 13)—Winter injury to berries in the great producing sections around Puyallup, Washington, run about as follows: Cuthbert red raspberries 75 per cent, loganberries 80 per cent, Evergreen blackberries 60 per cent, strawberries, a small amount of damage. Berries in other counties of western Washington also suffered severely.

In western Oregon prunes suffered severely but the damage is spotted. The prune crop will be light in the Willamette Valley. Apples and pears blossomed well and suffered no injury from Spring frosts, but there is still the possibility of a heavy June drop. Cherries were hurt badly in northern Oregon and in the southern part of the Willamette Valley. Peach, apricot and grape growers report heavy loss in eastern Oregon. Red raspberries and loganberries also suffered a loss of from 25 to 50 per cent. Prospects are good for strawberries. Nursery stock has been hurt to some extent.

The heavy damages have been due to a very dry summer in 1924, coupled with one of the worst freezes about Christmas time that we have ever had. —*W. S. Brown.*

Ohio. (May 4)—The prospects are excellent at this time for all kinds of fruits. The bloom was heavy throughout northeastern Ohio. Peach buds in some localities were destroyed but the loss was less than was supposed a few weeks ago. The danger from frost is not yet past but there are indications of a large crop. Peaches in the lake section near Port Clinton give exceptional promise, and there is not likely to be sufficient frost there to damage the crop materially.—*J. H. Gourley.*

Large Citrus Plantings in Texas

ABOUT 30,000 acres of young citrus trees have been planted in the Rio Grande Valley of Texas in the last few years. Texas growers are considering the organization of a co-operative association to handle the expected crops.

About 80 per cent of the plantings are devoted to grapefruit. It is said that settlers coming into the state from outside points are planting trees about as fast as they can purchase them. During the past season Texas growers marketed 525 carloads of citrus fruits. Prices averaged about 95 cents per box for grapefruit and $1.75 for oranges.

Texas grapefruit is said to be of good quality. The growers have been fortunate in selecting a few varieties for their plantings. The product is likely to provide competition for Florida grapefruit.

R. Trimble of Florida stated on his return from a recent trip to Texas that there was a possibility that the Texas and Florida growers could co-operate in the future in marketing their grapefruit crops.

IN A RECENT issue of the *Michigan Quarterly Bulletin*, an article by N. L. Partridge describes the results obtained from fertilizer experiments with grapes. The results indicate that nitrogen is the element which will most likely give satisfactory returns when applied to Michigan vineyards. It is stated that other elements may possibly prove beneficial under certain conditions.

Spraying for Brown Rot in the Northwest

(*Continued from Page 10*)

SPRAYING SCHEDULE FOR THE CONTROL OF BROWN ROT ON PRUNES AND SWEET CHERRIES IN WESTERN WASHINGTON AND OREGON.

Application and time.	For use on prunes.	For use on sweet cherries.
First brown rot spray (bud spray): Apply when blossom buds are white and before full bloom.	Bordeaux mixture, 4–4–50. Lime-sulphur, 1 to 50. Self-boiled lime sulphur, 8–8–50. Sulphur dust.	Bordeaux mixture, 4–4–50 Lime-sulphur, 1 to 50. Sulphur dust.
Second brown rot spray (calyx spray): Apply as soon as most petals have fallen.	Bordeaux mixture, 4–4–50. Lime-sulphur, 1 to 50. Self-boiled lime-sulphur, 8–8–50. Sulphur dust.	Bordeaux mixture, 4–4–50. Lime-sulphur, 1 to 50. Sulphur dust.
Third brown rot spray: Apply as soon as the husks are shed.	Self-boiled lime-sulphur, 8–8–50. Bordeaux mixture, 4–4–50. Sulphur dust.	Lime-sulphur, 1 to 50. Sulphur dust.
Fourth brown rot spray: Apply two to three weeks before fruit is ripe.	Self-boiled lime-sulphur, 8–8–50. Bordeaux mixture, 4–4–50. Sulphur dust, 85 per cent.	Lime-sulphur, 1 to 50. Sulphur dust, 85 per cent. Wettable sulphur.*

*Wettable sulphur: 12 pounds dusting sulphur — 200 mesh — 1½ pounds calcium caseinate; stir to thin paste in water, then dilute to 200 gallons.

or unsprayed fruit, yet in the shipping experiments the unsprayed fruit had all the way from two to 22 times as much brown rot as the sprayed fruit. An average of the different shipping results on the Napoleon variety showed 7.2 per cent of brown rot on the sprayed fruit and 29.6 per cent on the unsprayed fruit, and an average of the shipping results regardless of variety showed 6.4 per cent of brown rot on the sprayed fruit and 23.5 per cent on the unsprayed fruit, or approximately four times as much brown rot on the unsprayed cherries as on the sprayed ones in either case.

In the five years' test on Italian prunes, the sprayed fruit had an average of 1.6 per cent of brown rot at harvest and the unsprayed fruit 4.7 per cent. In the shipments of sound prunes from the different plots, the sprayed fruit developed an average of 7.2 per cent of brown rot and the unsprayed fruit 28.2 per cent, or practically four times as much as the sprayed fruit. With a single test on Agen prunes, there was 0.2 per cent of brown rot on the sprayed fruit at picking time and 1.8 per cent on the unsprayed fruit, while the sprayed prunes developed 0.5 per cent of brown rot in transit and the unsprayed ones seven per cent, or 14 times as much as the sprayed prunes.

The results show that the development of brown rot on sprayed and unsprayed fruit in transit may be considerably greater than the contrast in brown rot on the sprayed and unsprayed fruit in the orchard and also show that even under conditions where brown rot is of little practical importance in the orchard, spraying may greatly improve the carrying and keeping quality of the fruit.

Spraying

It should not be inferred from the Department's results that sprayed fruit will always have such marked improvement in shipping and merchantable qualities over unsprayed fruit. The general weather conditions, the nature of the spray material, and the thoroughness and timeliness of the applications all have a bearing on the effectiveness of spraying and upon its relation to the quality of the fruit.

In the above experiments a large number of sprays were tested and the work was planned to control the disease throughout the season. No sprays were found more effective than the standard materials already in general use in other fruit sections, such as commercial lime-sulphur, Bordeaux, and self-boiled lime-sulphur. However, all of these left a deposit upon the fruit which is objectionable in fresh fruit shipments. This difficulty was overcome when sulphur pastes were used or where the trees were dusted with sulphur, and in general satisfactory brown rot control was also obtained with these materials. While the applications early in the season had more or less effect on the *quantity* of fruit harvested, a very large proportion of the control of brown rot on the ripe fruit after shipment resulted from the single application made two or three weeks before harvest. (See spraying schedule above.) A grower who does not want to put on the entire spraying program should by all means apply the last spray for insurance, whether he is producing for fresh shipment or not.

Spray Injury.—In the Department's experiments, Bordeaux sometimes caused foliage injury on prunes in the earlier applications, and lime sulphur caused considerable injury in the later applications. Self-boiled lime-sulphur gave the best all-round results on prunes. On sweet cherries Bordeaux and self-boiled lime-sulphur caused a very marked reduction in the size of the fruit, and even lime-sulphur caused some dwarfing but proved to be the best of the standard materials.

Spreaders.—Rosin-fish-oil soap as a spreader was added to the Bordeaux, and the self-boiled lime-sulphur and casein spreaders were added to the commercial lime-sulphur to insure better covering. Sprays do not spread and stick well on the smooth, waxy fruits of the prune and cherry and a spreader is necessary to insure proper covering and protection.

An incidental result of considerable value was also found when it was discovered that the rosin-fish-oil soap greatly reduced the cracking which occurred on ripening cherries during showery weather. In some instances the loss from this cause was reduced almost 50 per cent.

For details of the Department's experiments the reader is referred to the following publications:

"Transportation Rots of Stone Fruits as Influenced by Orchard Spraying," Journal of Agricultural Research, Volume 22, No. 9, 1921.

"Control of Brown Rot of Prunes and Cherries in the Pacific Northwest," United States Department of Agriculture Farmers' Bulletin 1410.

"Prune and Cherry Brown Rot Investigations in the Pacific Northwest," United States Department of Agriculture Bulletin 1252.

Other Rots

Brown rot is by far the most serious disease of stone fruits, but blue mold, black mold (Rhizopus) and other rots also cause considerable loss, especially when refrigeration is lacking. In the shipping tests reported, spraying had no effect in holding blue mold and black mold rots in check, which is to be expected from the nature of these fungi. The brown rot fungus is able to penetrate the sound skin of both green and ripe fruit, while blue mold and black mold are able to attack only ripe and harvested fruit and then only when the fruit is bruised or otherwise injured so as to provide skin cracks for points of entrance. The control of these rots must depend largely upon

(*Concluded on Page 34*)

CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

Washing Winter Bedding

BLANKET washing should no longer be considered such a bugaboo to the housekeeper. She need not look with distress at the pile of blankets and quilts that have accumulated from winter use. Neither does she need to bind the edges with muslin or cheesecloth to keep the blankets clean.

The washing machine, especially the power washer, is the thing that has taken the drudgery out of washing woolen blankets. The machine has lightened the work until it does not involve much heavier work than does an ordinary weekly washing. As a labor saver the machine cannot be excelled for washing heavy pieces like blankets. Furthermore, the machine is by far the best way to wash blankets because of its power to force the suds through the fiber without any of the harsh rubbing which usually goes with hand washing.

Even Temperature Essential

Blankets, whether wool or partly wool, require the same care in washing as all other woolens. The main thing is to keep an even temperature throughout the washing and rinsing process. Too hot water and sudden changes in temperature cause shrinkage, and a shrunken blanket is a harsh, rough blanket. Use a neutral soap in either flake or jelly form, so it will readily go into solution. Make the jelly yourself by softening one cake of soap in two quarts of hot water.

The first step in machine washing is to fill the tub up to the water line with water not above 110 degrees Fahrenheit (just below boiling), and put into it about two cups of the soap jelly. Run the machine for two or three minutes to whip up a suds. If necessary, add more soap, sufficient to produce a good suds. Wash one blanket at a time if double, or two together, if single. Allow 10 to 15 minutes for the washing period, depending on the degree of soil. If you have a power washer, you can go on with other work while the blanket is being cleaned.

Blankets should never be wrung hard or twisted; in fact, the editor advocates no wringing, instead merely moving them from rinse water to rinse water and finally hanging on the line to drip. Some authorities advocate running them through a wringer which has been loosened until you can see between the rolls. I believe they will be fluffier and softer if allowed to drip, however.

The wash water may look dark, but do not discard it, as it is still good as a dirt dissolver and will all be removed in rinsing. Instead add more soap, work up a good, rich suds, and use it to wash more blankets. It may be reheated as it cools, the machine meanwhile being used for rinsing.

Use Soap in Rinse

The temperature of the rinse water should as nearly as possible approximate that of the wash water. A small amount of the soap should be added to each rinse water. If this is done, softer, fluffier blankets will result. All wool when new contains a certain amount of natural animal oil, which, if removed, leaves the fiber hard and lifeless. By the use of some soap in each rinse water, and by using warm instead of hot water, this animal oil to a great extent can be retained. Rinse the blanket two or three times, or as often as necessary until a clean, soapy water is left. Run the machine about five minutes for each rinse. For the first rinse use one-half cupful of the soap jelly, and reduce the amount in each succeeding rinse.

Bluing is both unnecessary and undesirable for blankets. White blankets have a creamy tint that is nicer looking than a pure white or blue-white color.

Select a clear, breezy day for the washing of blankets so that drying will be rapid. Quick drying also makes for fluffier blankets. The ideal way of drying blankets is to spread them on the lawn on some protecting white paper or cloth. If the blankets are to be hung on the line, take care to have an equal weight on each side of the line and have the edges and corners meet.

For the woman who does not possess a washing machine, there are various hand devices available which will lighten the work considerably and produce better results than will hand washing. These devices are usually some form of a suction cup attached to a long handle, and they clean by suction and friction. Their value lies in the steadiness and precision of the strokes. If the worker arranges her tubs so that she keeps a "straight back" while working, she will do much to conserve her strength. If the tub is portable, set it on the floor, and if stationary, stand on a box or stool so that stretching will be unnecessary. When the blankets are clean, rinse them three or more times in slightly soapy rinse waters, decreasing the amount of soap with each succeeding rinse water as in the machine. Use the suction device for rinsing also.

Mark Soiled Spots

Some housewives, lacking a washing machine, get excellent results with a scrub brush and soap suds for washing and a hose for rinsing. For this lay the blanket on a table covered with oilcloth, or on any other smooth surface, and scrub with a brush and soap lather. Before washing it would be a good idea to mark extra soiled spots with safety pins so that these places can be given additional attention. When clean hang on the line and rinse thoroughly with the hose.

Eiderdown quilts and cotton quilts of the "quilted" type (that is, those stitched in fans close together all over the quilt) may be machine-washed also. But wool quilts and ordinary "tied" cotton quilts should never be washed as the padding will all separate and draw up in lumps. Woolen quilts and tied cotton ones should have removable covers which may be washed without ruining the quilt. They may be sent to the dry cleaners, but the annual cleaning bill will be considerable of a shock.

The down quilts and cotton "quilted" comfortables should be washed in warm, sudsy water, just as you would the blankets, and then rinsed in at least two warm rinse waters. Quilts should be washed and dried on a clear, windy day. For the down quilt, change the position several times during the day and shake lightly to fluff up the down. After the quilt is thoroughly dry, the satin or sateen trimming may be pressed lightly with a warm iron.

Sheet Protects Blankets

Here's an "ounce of prevention" against washing quilts — the best means I know of to do away with

frequent washings. Have your bed sheets sufficiently long so that they can be turned back over the blankets and quilts at the head of the bed for a depth of 10 to 12 inches. The turn back of the sheet will come just under the spread. In this way the heavier bedding will be entirely protected. The sheets should, of course, be long enough to tuck in well at the foot, also.

Washing Pillows

To wash pillows, have another feather tick ready, open one corner of the soiled pillow, sew the "mouths" of the two ticks together and shake the feathers into the clean tick. Turn the tick to be washed, remove the last few feathers and wash as you would any ordinary cotton goods. It is well to coat the inside of the tick with a thick flour paste and let it dry. In this way, no feathers can work through the tick. If you do not have an extra tick on hand, you can put the feathers in a pillow case or other clean sack until the tick is ready for them again.

First Aid to the Drownding

EVERY summer there are many deaths from drowning, especially among children. Many more would have died if their rescuers had not had some knowledge of first-aid methods and applied them with dogged persistence. *You yourself* may be called on to render assistance to some neighbor's child during the next three months, with his life depending on your knowledge and skill in giving artificial respiration. Will such an emergency find you prepared?

Before starting artificial respiration or any other measures, be sure to remove the water from the lungs of the patient. Loosen his clothing, turn him face downward, raise his body at the waistline to cause the water to run from the trachea, or "windpipe," and then clean out any accumulation of mucus from the back of the throat with a clean handkerchief or other cloth.

Two Practical Methods

There are two methods of giving artificial respiration outside of the pulmotor, which is seldom available in time for such an emergency in a rural district. There are also other methods, but these two, Sylvester's and Schaefer's, are the most practical.

For Sylvester's method, the tongue must be first drawn forward and held so. If there is no assistant to hold the tongue out, tie a handkerchief or string around it, cross the ends, pass them around to the back of the neck, and tie them there. Lay the patient on his back with his head and shoulders slightly elevated. Then, standing behind him, grasp his arms above the elbows and draw them slowly outward and upward till they meet over his head. Hold them in this position two seconds and then flex them slowly but forcibly against the sides of the chest. The first motion causes inspiration, the second expiration. The combined movements should be repeated 16 times in a minute until respiration takes place naturally or until all hope of resuscitating the patient has to be abandoned. Resuscitation should not be considered hopeless until artificial respiration has been practiced at least two hours. Persistence in the case of drowning is important, as patients have been revived after several hours in some instances.

Schaefer's Method Simpler

Schaefer's method is newer and much simpler. Lay the patient prone on his chest, the head turned slightly sidewise, the tongue protruding from the mouth. Kneel by the side of or across the patient. Place your hands flat upon his back over the lowest ribs, and, with the weight of your body, press firmly and gradually so as to expel the contents of his lungs. Then relax the pressure by swinging your body slowly up without removing your hands. The patient's chest resumes its former dimensions, and the fresh air is thereby drawn into the lungs. Repeat these movements of pressure and relaxation about every five seconds, not oftener.

These are the two best-known methods of starting normal breathing again. If you do not possess an extraordinary memory, it might be well to save this clipping, put it up in the medicine chest and read the instructions over occasionally until you have them firmly fixed in your mind. Learn one method thoroughly. If the opportunity arises, teach your friends, as they may be confronted with such an emergency.

It goes without saying that the patient should be rescued from the water as *quickly as possible*, as every minute under water lessens his chances of recovery. It is also important to loosen the clothing, empty water from the lungs and begin artificial respiration *as soon as the body is recovered*. As soon as respiration is firmly and normally established in the patient, remove all wet clothes, put him between warm blankets, and keep him quiet and warm. In some cases stimulants are needed, but these should be given only by a physician or on a physician's orders.

"Knowledge is power." Let us all have our share of useful knowledge!

Tempting Berry Desserts

DURING the hot summer months, just at the time we crave something tart and refreshing, come berries with their many delightful flavors. The berry recipes given this month will help the housewife find new ways of serving these fruits, in addition to the old favorites, such as pies and short cakes. No matter how well the family likes strawberry short cake, it becomes less of a treat if served too often. Why not serve their favorite berry fruits in new, yet equally delicious ways? Then the "stand-bys" will gain instead of lose in favor as the season progresses.

Raspberry Mousse.

1 t. gelatin
¼ c. cold water
¼ c. boiling water
1 pt. heavy cream
3 T. sugar
1 c. raspberry juice
Few grains salt

Soak gelatin in cold water 5 minutes, dissolve in boiling water and cool. Beat cream until stiff and add dissolved gelatin and remaining ingredients and whole berries if desired. Fill chilled mold with mixture, adjust cover, pack in rock salt and finely crushed ice, and let stand three hours. Serve in sherbet glasses, piling it in lightly. This is a rich dessert.

Nut Frappe.

½ envelope gelatin
¼ c. cold water
½ c. sugar
1 c. pineapple and strawberries
1 c. cream
¾ c. milk
1 egg white
1 c. chopped nuts

Soak gelatin in cold water 5 minutes and dissolve over hot water. Add dissolved gelatin to cream, milk and sugar and stir in beaten egg white. When cold, add the pineapple and strawberries, which have been chopped in small pieces, also the chopped nuts. Serve ice cold in sherbet glasses.

Blueberry Cake.

1 T. shortening
1 c. sugar
1 egg
¾ c. milk
1¾ c. flour
2 t. baking powder
1½ c. floured blueberries

Cream shortening, add sugar, beaten egg and milk. Sift flour and baking powder and add to batter. Stir in blueberries. Bake in very shallow greased pan in moderate oven 25 to 30 minutes. Break in small pieces and serve while hot with butter.

Fruit Jelly.

1 c. fruit juice, left over from any canned fruit (strawberry, loganberry, raspberry, grape, currant). Fruit juice with some color is best. Heat fruit juice, add 1. T. gelatin first softened in ½ c. cold water, juice of ½ lemon, and sweeten to taste. Pour in wet mold and let stand till firm. Slices of banana may be added when it begins to thicken, or at serving time jelly may be surrounded with seasonable fruit. The jelly mixture may be poured directly into the serving glasses, but it is prettier when molded. To unmold, dip the mold in warm water for a minute, place the inverted serving glass or dish over the mold and invert the mold. Work quickly. Serve with whipped cream or sweetened cream.

Strawberry Bavarian.

3 c. crushed strawberries
1½ c. sugar
2 T. gelatin
6 T. cold water
2 c. cream, whipped

Soak gelatin in cold water until swoll-

(*Continued on page* 29.)

No. 2334—One-Piece Dress Suitable for Stout Figures.

Cut in sizes 36, 38, 40, 42, 44, 46, 48, 50 and 52 inches bust measure. Size 36 requires 2⅞ yards of 40-inch material with ⅝ yard of 36-inch contrasting.

No. 2321—One-Piece Beltless Style.

Cut in sizes 16 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 3 yards of 40-inch material.

No. 2436—One-Piece Slip-On Dress.

Cut in sizes 16 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 2⅞ yards of 42-inch material with 1¼ yards of 32-inch contrasting and 2 yards of ruffling.

No. 2413—Ladies' Suspender Dress.

Cut in sizes 16 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 2¾ yards of 42-inch material with 4 yards of binding for dress and 2⅛ yards 40-inch material for guimpe.

No. 2300—One-Piece Slip-On Dress for the Woman of Plump Proportions.

Cut in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 4¼ yards of 40-inch material with ⅝ yard of binding.

The hot iron transfer pattern No. 730 (blue and yellow) costs 15 cents extra.

No. 2417—Girls' Jumper Dress.

Cut in sizes 6, 8, 10, 12 and 14 years. Size 8 requires 1½ yards of 36-inch material with 3⅝ yards of binding for dress and 1¼ yards 36-inch material for guimpe.

No. 2315—Costume Slip that can Be Made with Built-up Shoulders and V-Neck or with Straight Upper Edge with Shoulder Straps.

Cut in sizes 16 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 2⅝ yards of 36 or 40-inch material with 1⅝ yards of ribbon.

The hot-iron transfer pattern No. 713 (blue only) costs 15 cents extra.

No. 2422 — Girls' One-Piece Slip-On Dress Closed on Left Shoulder.

Cut in sizes 6, 8, 10, 12 and 14 years. Size 8 requires 1¾ yards of 40-inch material.

No. 2035—One-Piece Dress. A Glance at the Diagram will Tell You how Simple this Dress is to Make.

Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3 yards of 36-inch material.

ORDER BLANK FOR PATTERNS—Price 10 cents each.

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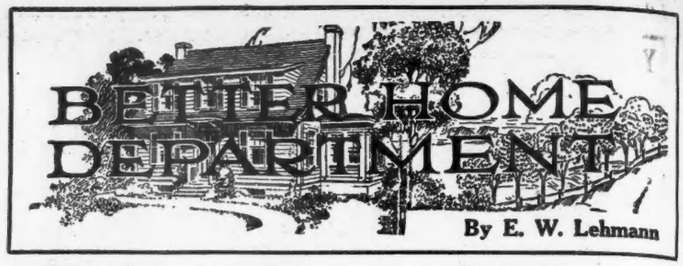


By E. W. Lehmann

Machinery Increases Efficiency

THE PROGRESS of every industry has been marked by the development of machinery used in the industry. Agriculture is no exception. Agricultural machinery and equipment play a large part in the productive efficiency of every fruit grower, and proper equipment also plays a large part in labor saving in the home.

The farmer of 1895 was five times as efficient as the farmer in 1850. In the production of wheat from 1830 to 1895, he was 17.8 times as efficient, and in the production of oats, 11.7 times as efficient. In the production of breadstuffs as a whole his efficiency increased more than 10 times during this period. It has been estimated that during the last half of the nineteenth century, the cost of production of crops was reduced by one-half.

A marked increase in the use of machinery has taken place during the last 25 years. This has made possible an increased production of from 35 to 68 per cent in the principal farm products during this period. Although there has been an increase of only about four per cent in the number of farmers during this period, there has been an increase of more than 40 per cent in the total population, and we have a plentiful supply of food products.

Be Careful in Purchasing Machinery

During the war, with the high cost of labor and the urgent demand for food, the farmer was justified in making heavy expenditures for machinery. With lower labor costs and less demand for his products, the farmer must practice greater economy of production and more carefully scrutinize his expenditures. He must be a better mechanic as well as a better manager. Machinery must be used efficiently. With more complicated machinery in use he must give it more attention. He must appreciate the fact that the item of power is the biggest item of operating expense on the farm. Many economies can be practiced by the careful selection and utilization of power on the farm.

He must be careful in the purchase of all equipment. Buy service in buying machinery. Remember that the local dealer and the manufacturer are factors in service. Closer co-operation between the farmer and the dealer, and the farmer and the manufacturer, is desirable. To make possible better service the farmer should acquaint the dealer with his needs. New machines can be secured more promptly and at less expense if the dealer knows the farmer's needs some time before a machine must be taken into the field.

Don't Buy Too Hastily

Now is the time to begin thinking about the new sprayer that will be bought for next season. A better selection can be made by taking time to study the desirable features of different makes. When a new machine is brought out, special attention should be given to it. Don't buy too hastily, and be sure the machine will pay dividends on the money invested in it before buying. It is important that every fruit grower have the equipment needed for his particular business, to make possible the greatest possible productive efficiency of every worker, and it is equally important that he avoid over-equipping his farm. Too much money invested in machinery for a particular farm is poor business. While the large scale grower will find the power sprayer and the tractor good investments, the man with a small area will make a mistake to get the same sort of machinery.

Care of Machinery

If the farmer took as good care of the machines and implements used in the field as his wife does of the machines and equipment used in the home, there would be little reason for complaining of the high cost of keeping the farm equipped. A poor job is often done, and a lot of time is unnecessarily wasted, because many farmers fail to give proper attention to machinery well in advance of the time it is to be used in the field.

Machines Need Protection

Although a machinery shed is not found on every farm, its value is little questioned. Many farmers fail to appreciate the loss due to unprotected machinery. The degree of depreciation of different machines due to lack of shelter depends to a great extent on the particular machine. In other words, some machines should be protected more carefully than others for best results. Any machine that has many wooden parts or exposed polished metal surfaces should be protected. It is desirable to keep the spraying outfit under shelter when not in use. The machinery shed is not only a good place in which to store machines, but it is a good place in which to make repairs on a rainy day.

Losses Due to Poor Machines

Rapid depreciation in value and the necessity of buying new machines because the old ones have rusted out before their time is an important result of the lack of proper protection. One of the big losses, however, is the loss due to inefficient operation of the machine in the field. Time is always lost in getting ready for field work a machine that has been neglected and allowed to rust and get out of shape.

Planning a Machine Shed

In planning a machinery shed, the matter of convenience must be kept in mind. The long, narrow type of building is more convenient from the standpoint of ease in storing the machines and of taking them out of the building when ready for use. Where large doors are used they should be substantially built, and if made to slide, they should be hung on strong hangers.

The size of the shed is important. This will depend entirely on the number and size of machines to be housed and can be easily determined by each individual. Machines will often be left out of a building that is crowded, so the shed should be plenty large.

The gable roof is a common type of construction. It is usually made self-supporting so that posts are eliminated from the interior of the building. The gable type of building is sometimes constructed with the front slope shorter than the back, which makes it easier to get some of the higher machines into the building, and this roof discharges most of the water on the back side of the building.

As to type of construction, it is best to provide a concrete foundation irrespective of the kind of material of which the building is constructed. The most economical material to use can be determined only by making inquiries of the local dealers. The material to use would depend to a certain extent on the material of which other buildings are constructed. A building constructed of lumber and concrete will last a great many years under conditions on the average farm.

ANNOUNCEMENT.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,

of American Fruit Grower Magazine, published monthly at Chicago, Ill., for April 1, 1925.

State of Illinois, County of Cook, ss.—Before me, a notary public in and for the state and county aforesaid, personally appeared Harry W. Walker, who, having been duly sworn according to law, deposes and says that he is the business manager of the American Fruit Grower Magazine and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher—Magazines, Inc., 53 W. Jackson Blvd., Chicago, Ill.

Editor—None.

Managing Editor—C. E. Durst, 53 W. Jackson Blvd., Chicago, Ill.

Business Manager—Harry W. Walker, 53 W. Jackson Blvd., Chicago, Ill.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)—C. A. Tupper, L. A. Sisley, H. W. Walker, J. E. Montgomery (all at 53 W. Jackson Blvd., Chicago, Ill.); C. W. Price, 15 Park Row, New York City; E. G. K. Meister, 501 The Arcade, Cleveland, O.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state.)—None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest, direct or indirect, in the said stock, bonds or other securities than as so stated by him.

HARRY W. WALKER,
Business Manager.

Sworn to and subscribed before me this 25th day of March, 1925.

(Seal) A. C. BAMBERGER.
(My commission expires Aug. 6, 1925.)

Chats with Fruit Growers Wife

(*Continued from page 27.*)

en, then melt by setting over hot water. When gelatin is fluid, stir into sugar and strawberry. When this mixture is syrupy in consistency, fold in whipped cream and chill by packing in covered container and packing with ice. Serve with whipped cream.

Snow Ball.

½ c. butter. White 4 eggs.
1 c. sugar. 2¼ c. flour.
½ c. milk. 3½ t. baking powder.

Cream the butter, add the sugar gradually, with flour mixed and sifted with baking powder; then add the whites of the eggs beaten stiff. Steam 25 minutes in buttered cups, serve with preserved fruit, quince marmalade, strawberry, or loganberry sauce.

Loganberry Sauce.

½ c. butter. 1½ c. powdered sugar.
⅔ c. loganberries. White of one egg.

Cream the butter, add sugar gradually, egg beaten until stiff, and loganberries. Beat until fruit is mashed.

Loganberry Juice.

Put barely enough water in the bottom of the kettle to prevent fruit from sticking and burning. Fill with fruit and heat (do not boil) until the fruit is sufficiently softened for releasing the juice. Assist the softening process by mashing the fruit as it is heating in order that it may be over the fire no longer than absolutely necessary. Turn into jelly bags, drain and squeeze. Now sweeten the juice with one-third its measure of sugar. Heat to a temperature slightly below the boiling point, and bottle at once or seal in fruit jars.

This makes a rich syrup which should be diluted with four or five parts of water to one of syrup for drinking.

Berry Pies.

3 c. blueberries, huckleberries or blackberries ½ t. salt
1 T. flour
1 t. butter
⅔ c. sugar

Line a pie plate with plain pie paste, fill heaping with berries, dredge with flour, sugar and salt and dot with butter. Cover with top crust or strips of pastry to form lattice. Bake about 45 minutes in moderate oven, having it quite hot at first, but cooler while the juices thicken.

Fruit Sauce for Puddings.

½ c. butter.
1 c. fresh strawberries, raspberries or canned fruit without juice.
1 c. powdered sugar.
1 egg white.

Cream butter and add sugar gradually. Add egg white beaten stiff and beat well. Add slowly the fruit which has been carefully prepared and mashed. Beat until creamy and serve with plain puddings.

Fresh Strawberry Icing.

Crush ten strawberries with a little sugar and few drops lemon juice and let stand until juicy. Mix in gradually 3 c. confectioners' sugar. Spread between layers and on top of cake.

Berry Tapioca Pudding.

1 pt. berries ½ c. sugar
3 c. hot water 1 t. butter
⅓ c. minute tapioca Pinch of salt

Crush berries (raspberries or strawberries), sweeten to taste and let stand 15 minutes. Cook for 15 minutes in double boiler tapioca, sugar and butter in hot water, stirring frequently. Remove tapioca from fire and stir in fruit when somewhat cooled. Serve cold with whipped cream. Loganberries may also be used in this recipe.

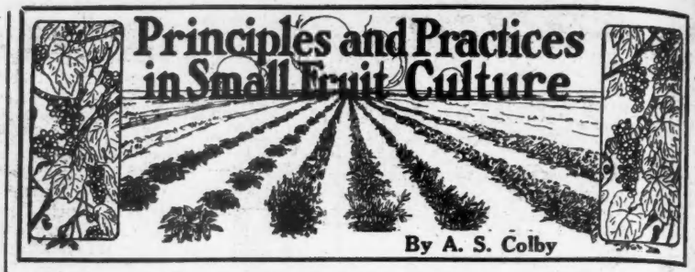
Measurements.

1 c. = 1 cup.
1 t. = 1 teaspoonful.
1 T. = 1 tablespoonful.
1 pt. = 1 pint.
1 qt. = 1 quart.
1 lb. = 1 pound.
All measures are level.

Uses for Left-Over Cake

OFTEN the housekeeper will have a few pieces of cake left after the family has eaten about all it craves of that particular cake. If it is a fruity dark cake of the gingerbread type, it can be made up, with the addition of other ingredients, into a delicious steamed pudding to be served with lemon or hard sauce. Some of the lighter cakes may be broken or cut in pieces and served with whipped cream and chopped nuts as a pudding. Whipped cream, sweetened and enriched with chopped nuts, heaped on individual servings of cake, will be a welcome dessert at any meal. A clear, lemon-flavored cornstarch sauce may be poured over sections of cake also.

AMERICAN FRUIT GROWER MAGAZINE: I wish to take this opportunity to say a few words regarding your magazine. I think it is the finest published monthly in existence, and I would not be without it. Am keeping every copy of it and have quite a stack of them, being a reader of the magazine for about four years.—*Karl C. Krupp, Missouri.*



Renovating the Strawberry Patch

THE NUMBER of crops to be taken from the strawberry bed depends upon the variety grown and the condition of the bed at the end of the first picking season as regards soil fertility and the presence of weeds. In some strawberry sections it is good practice to secure but one crop of fruit from a patch. If a variety like the Dunlap is grown and good care has been given the bed during the first season, it will usually pay to renovate it. Less vigorous growing varieties like the Aroma often produce higher yields after renovation than before.

The chief purpose of this renewal is to thin out the older, unproductive plants in the rows and give those that remain an opportunity to produce new matted rows of vigorous, healthy plants.

Necessary Steps in the Renewal Process

The best time for renewal is in the early summer, as soon as possible after the bed is through fruiting. If the mulch is heavy, a portion of it should be removed. The tops of the plants are then clipped off with a sickle or mowing machine. If the mulch is light and somewhat matted down in the middles of the rows, it may be left there. The leaves, after drying, may be raked into the middles also. The bed is then burned over on a windy day, preferably after a rain, when the ground is moist. If there is no wind and the plant crowns are dry, a slow fire may injure them. These operations eliminate many diseases and insect pests, such as leaf spot and leaf roller. Without these sanitary aids, it would be almost impossible to control strawberry pests, even if spraying were thoroughly done.

The next step is to thin out surplus plants. This is done with a hoe, plow, or disk cultivator, depending upon the size of the bed. If a hoe is used, the surplus plants are cut away, leaving vigorous young plants about 10 inches apart in narrow rows.

On a large plantation, either a disk or a turning plow should be used to narrow down the original matted row. If a plow is used, the land on both sides of every row should be turned away from the row, leaving a narrow row. A careful plowman is a necessity in this work. The middle space between the rows is then cultivated with a spike-toothed cultivator, the ridges smoothed down with a narrow planker, and fresh soil worked in around the narrow strip of plants. Sometimes a spike-toothed harrow is then run across the patch with the teeth set at a back slant so as not to tear out too many plants. If it seems inadvisable to use this tool, it will be necessary to go over each row with a hand hoe and cut out the surplus plants in the row. It is highly essential that fresh, friable soil be placed in contact with the plants remaining.

Care of the Patch After Renovation

A coat of well rotted manure, spread on and cultivated in with the soil around the remaining plants, will soon induce new runners to start. With good cultural methods continuing throughout the season, a new matted row should be formed by the end of this time, which will usually be capable of producing a good crop the next season.

Extensive experiments carried on in Wisconsin and Michigan indicate that artificial watering, applied either by the overhead system or in the furrow, is a valuable aid in assuring a good crop of fruit during a dry season. One should bear in mind that the beneficial effects of irrigation are distributed throughout the life of the plant. Sufficient water supply during the late summer after renovation insures the production of heavier crowns and more vigorous fruit buds for the crop of the next year. The lack of necessary moisture during the hot weather which often follows the renovation of a strawberry patch in summer is directly responsible for a comparatively small crop of fruit the ensuing year.

As was the case during the previous season, good cultivation must be practiced from the time of renewal to early fall. The treatment during the following winter and spring should be similar to that given the first two seasons; that is, mulching for winter protection and removal of the mulch at the correct time in the spring. It is seldom advisable to fruit a bed more than two years.

Summer Pruning of Brambles

EXPERIENCED growers of blackberries and raspberries are generally agreed that some form of summer pruning or, more correctly stated, "tipping" is good practice. By "tipping" is meant the heading back of the growing shoot by simply breaking it off between the thumb and finger when it is soft and brittle.

Objects of Summer Pruning

With blackberries and raspberries, except the red varieties, the practice of "tipping" forces the growing cane to send out side shoots or laterals instead of making one long cane. The more vigorous growing brambles will respond by making long, strong laterals well down on the cane. This insures shorter, stockier, more "bushy" plants, which are less inclined to winter injury from drying winds and which are easier to spray and handle in harvesting.

Red raspberries, on the other hand, are not usually headed back but are allowed to grow unchecked. If tipped back, they have a tendency to send out a few rather weak lateral branches and many small, weak canes from the crown of the plant. This results in the production of a number of poorly developed side shoots and canes, with weak fruiting buds. Some varieties growing in fertile soil appear to be exceptions to this rule.

When to Summer Prune

The most important point to remember, if the work is to be successful, is to head back the canes at the right time with reference to their height. The usual height is when the cane is from 18 to 30 inches tall. Do not wait until the cane is 40 inches long and then head it back. This operation will result in a loss of time and energy on the part of the plant. The side shoots, instead of starting vigorously, will be slow in starting and weak in their manner of growth if the main cane becomes too long.

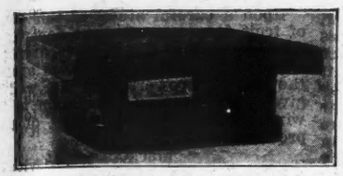
The writer usually goes over his plantations twice each season at about two-week intervals, in early summer, tipping the plants which have reached the proper height at those dates. The young canes which grow after this time will usually be small and superfluous and should be removed at the time dormant pruning is done later in the season.

Rodent Pests

(*Continued from page 8.*)

times a year, producing an average of 10 young to a litter. At this rate a pair of rats breeding uninterruptedly and without deaths would at the end of three years (18 generations) be increased to 359,709,482 individuals. If there are 100 rats on a farm, there is a normal increase of eight rats a day. It is very evident then that to control them, one must make ratting a serious business. Following the successful effort to destroy rats, any that survive the onslaught will usually leave the place in search of a safer retreat. Traps or poison can usually be relied upon for this work.

Trapping.—Instead of getting one or two high-priced cage traps for the average farm, buy not less than 25, preferably 50, wooden-base snap traps and use them with an assortment of baits, such as bacon rind, fish, bread, and



A convenient and efficient container for exposing poisoned bait

apple. Tie the bait on the trigger securely and set in rat runs or along the wall with the trigger end toward the wall. Lumber or boxes tilted over the trap will protect chickens from getting into it.

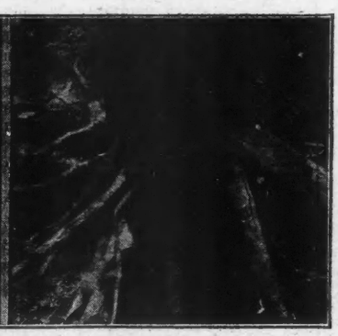
Poisoning.—For farm use barium carbonate has proved to be the best rat poison on the market, because it is mild, tasteless, cheap, and efficacious. The following directions of the Biological Survey should be closely followed for the best results:

Select one bait from each of the following classes and mix powdered barium carbonate with it in the proportion of one part by weight of poison to four parts of bait, adding water when necessary to make the baits moist:

1. Meat: Hamburg steak, canned salmon, sardines, liver, etc.
2. Cereals: Bread, rolled oats, cornmeal, etc.
3. Fruits or vegetables: Apple, melon, banana, tomato, etc.

Wrap teaspoonful quantities of the three kinds of poison baits separately in small paper bags or in squares of newspaper, and put one of each kind to a setting, in places where rats are apt to feed. Remove uneaten baits each morning and put out fresh ones each evening until rats disappear. Rats lose their suspicion of poison baits which have been wrapped in paper and can easily be poisoned in this way. Prepare and distribute about three times as many baits as you consider there are rats on the premises. If the baits are placed where cats, dogs, or chickens can get into them, wait until the chickens have gone to roost, shut up the dog and cat before baiting, and pick up the uneaten baits in the morning before the animals are released.

An apple tree badly girdled by meadow mice



Root system of an apple tree destroyed by field mice

Barium carbonate is a poison and should be kept out of reach of children and domestic animals. In case of an accident, cause vomiting by using salt, mustard, and warm water, followed by a tablespoonful of Glauber or Epsom salt. Call a physician.

Permanent Rat Riddance.—Permanent riddance of rats is based entirely on sanitary conditions and rat-proof buildings. When constructing new buildings, make them rat-proof and eliminate the rat menace. Rat-proof storage houses, grain bins, grain cribs, and poultry houses will go a long way toward the elimination of this pest.

Groundhogs

Another pest of major importance in portions of the East and Middle West is the groundhog, known as woodchuck is some sections. While a so-called weather prognosticator, the groundhog has no commercial value. It barks young and old trees, shrubs, and vines, and is destructive to soy beans, melons, alfalfa, corn, and truck crops, while its burrows in levees and banks, cause flooded lands and washes, and its dens in level fields are a source of danger to stock. In fact, this animal is everywhere recognized as a serious pest by the orchardist and farmer alike, and active steps have been taken to bring it under control. Until recently, the only systematic control method used was the bounty system. In this manner the state of Michigan spent about $100,000 annually for a period of several years but without success. In the spring of 1924, the Biological Survey of the Department of Agriculture, in co-operation with the Purdue (Ind.) and Illinois Agricultural Experiment Stations, conducted two experimental county-wide drives against this rodent, one in Morgan County, Ind., the other in Stark County, Ill., the aim being to reduce the number of groundhogs in these regions because of the severe damage done by them. The results of these campaigns exceeded expectations. At a cost of $150 in two townships of Morgan County, Ind., 11,500 groundhogs were estimated to have been killed; while in Stark County, Ill., over 50,000 were destroyed at a cost of $800. The plan followed in these counties consisted in the fumigation of the dens during the breeding and active season of the groundhog, which in the Illinois-Indiana belt extends from April first on through the summer. At this

(*Continued on page 33*)

The Blackcap Industry of the Northwest

(*Continued from Page* 12)

The trouble threatens to be so serious in the Northwest that it is high time to establish, if possible, certified nurseries, where young plants may be grown free from the trouble and disseminated to growers. By carefully roguing out the infected plants, and in some cases entire plantations, and by substituting for them stocks that have been properly certified, it may be possible to check this very serious menace before it has progressed to the point of seriously threatening the black raspberry industry.

Harvesting and Handling

At the time of picking, the fruit should be black, not reddish or bronze, and it should separate easily from the receptacle. Pickers must be instructed to pick the vines clean and to get into the center of the bush. In some varieties, such as the Plum Farmer, many berries will be wasted unless these instructions are obeyed. Pickers must be told not to mash the fruit when it is picked. Pickers harvest by the box and naturally try to do their work as rapidly as possible. They are apt to pick off several ripe berries in a clump and mash them, unless they are carefully watched. Never pick the fruit when it is wet from dew or rain. While it may look good in the box, molds are very apt to develop upon it, especially if it has to be shipped or taken any great distance. Dirty cannery boxes are frequently the cause of much deterioration in this way. State laws usually require canneries to send out clean boxes, so if fruit spoils in dirty boxes, the canneries ought to stand the loss. Fruit slightly damaged by rains, though it may be rather unsightly for fresh sales, can be used for canning and drying. In picking, every precaution should be taken to keep the fruit out of the sun as much as possible. Berries go down rapidly when exposed to the heat and sunlight after picking.

In managing pickers, some sort of a card, which can be punched for each picker, seems to be the best system. These cards are kept at the picking shed and the talley is made every time a carrier is brought in. Carriers containing eight boxes or cartons are of a good size. These can be easily made up at home. A convenient arrangement for the picker is to have a container which can be strapped on around the waist and which holds from one to two boxes. The pickers can fill this much more rapidly than when they have to take one hand to hold the box.

Berries can be transported on well loaded auto trucks for several miles without injury, the distance, of course, depending upon the condition of the roads.

Yields

Yields are the real test of the business. High yields do more to keep down overhead costs and to insure profits than any other factor. The average yield of blackcaps in the Northwest will not run much over a ton to the acre. This is much lower than it should be. On rich, sandy, well-watered loam soils, this yield ought to be increased to at least two tons to the acre. With the present range of prices on canned and dried goods, relatively large yields will be needed if good profits are to be made. High yields are only brought about by careful attention to details all along the line.

Economic Unit

By this term is meant such an acreage of land as can be worked to advantage by one man, equipped with good tools, horses, buildings, etc. There are several things influencing the size of the economic unit, among them being the type of soil, whether easily worked or not, whether the land is under irrigation or not, the distance to market, whether tractor or horses are used, and the hustling ability of the man himself. Generally speaking, 10 to 12 acres of blackcaps is about all one man can take care of properly when horses are used for cultivation. If a small tractor is substituted, this acreage can be increased by five or six acres. Many people make the mistake of not having an economic unit on their fruit farms. For instance, if a man should have only six acres of berries, this would not be enough in itself to keep him busy all the time, and the overhead charge on the fruit would be correspondingly large. On the other hand, if he tries to take care of 17 or 18 acres of fruit without sufficient help or equipment, the chances are that he will do a mediocre job and not attain good yields or get fine quality in his berries. In one case he should so increase his acreage that it will give him occupation for the whole time, and in the other, he should either decrease his acreage so that he could handle it satisfactorily himself, or increase it so that it would be sufficient for two men to handle, in which case it would be equivalent to two economic units.

Upon a careful study of this phase of fruit farm management depends in a large measure the relative overhead charges which must be placed against the fruit. Growers will do well to give much time and attention in the winter months to the study of such problems.

Markets

In the Pacific Northwest most of the blackcaps are canned, though east of the Cascades much fruit has been dried. Recently, with dried fruit selling for 35 to 40 cents per pound, it has become even more profitable in many cases to dry than to can the fruit. It takes three to four pounds of fresh fruit, depending upon soil and climatic conditions, to equal one pound of the dried product. Cannery prices will range, as a rule, from seven to eight and one-half cents per pound for fresh fruit. The pack of canned goods in the Northwest ranges from 26,000 to 28,000 cases a year, valued at $150,000 to $170,000. This might be increased materially if higher yields and greater profits could be obtained. Allowing for supervision and overhead charges and insurance on the investment, blackcaps can be produced for about six to seven cents per pound, with a yield of one ton to the acre. Larger yields, up to two tons at least, ought to be obtained on suitable soils for a cost which would not be nearly so high in proportion; therefore more profit would result.

Varieties

At the present time, only four varieties are commonly found in the commercial plantings of the Northwest. They are the Plum Farmer, Cumberland, Munger and Gregg.

The Plum Farmer is a vigorous grower and heavy producer. Its fruit is large, jet black, glossy and luscious. It has a rather long picking season, extending over a period of 10 days or even two weeks under favorable conditions. The late ripening berries are found scattered through the center of the bush and appear singly here and there, so that the variety is not so popular with pickers as other sorts which have the berries clustered more closely and arranged on the outside of the bush. The prices received from cannerymen for the fruit of this variety are as high as for any other, although the Munger is slightly preferred by some. For these reasons, the Plum Farmer should find a prominent place in commercial plantings of blackcaps in the Northwest.

The Munger is less vigorous than the Plum Farmer, as a rule. It is a little more particular in its soil requirements, bearing very well under optimum conditions but not standing hardships of soil and season as well as the Plum Farmer. Its berries are borne chiefly in clusters and to the outside of the bush. Its fruit is large, firm, of excellent quality, with a shorter picking season than the Plum Farmer, and it ripens about one week later than that variety. In spite of the fact that it is somewhat easily damaged by rain, it is probably the most popular variety for the cannerymen.

(*Continued on page* 34)

Rodent Pests

(*Continued from page 31*)

time of the year, other animals do not live in groundhog dens, and the dens can be easily distinguished from those of the fox, skunk, weasel, and opossum. Two characteristics determine a groundhog den, one a freshly cleaned-out burrow with the dirt mounded up immediately in front of the hole, and the other, girdled trees, shrubs, and nibbled vegetation about the den. Be sure to treat only the burrows plainly belonging to groundhogs.

Fumigation.—The two fumigants used for the control of groundhogs are carbon bisulphide and calcium cyanide flakes. Calcium cyanide flakes are preferable because they are more easily applied, inexpensive, non-explosive and very efficacious. Directions prepared by the Biological Survey for the use of both materials follow:

1. Make a complete survey of your farm for groundhog burrows.

2. Treat each used hole with three tablespoonfuls (one and one-half ounces) of carbon bisulphide, or one tablespoonful (about one ounce) of calcium cyanide flakes, as follows:

(a) Pour the carbon bisulphide on a wad of cotton, rags, waste, or other absorbent material and place well down in the burrow.

(b) Place the calcium cyanide flakes as far as possible into the burrow, using a long-handled spoon.

3.—Close tightly the entrance to burrows immediately with sod and damp earth, taking care to prevent loose sand or dirt from falling on the fumigant.

4.—Examine all treated burrows after the lapse of one week and retreat any that may have been reopened.

Precautions. — Carbon bisulphide evaporates rapidly and is highly explosive. Do not smoke or have fires around when using it. Keep calcium cyanide in open air. When opening the can, stand to the windward so as not to breathe the fumes. Wash hands at once after working with this material and use care to get none of it in the mouth.

Rabbits

Cottontail rabbits are hunted for sport and food in most parts of the United States and in some localities are the only game animals available. In many sections, however, they become objectionable because of the injury they do to orchards and farm crops. Despite their useful qualities, it then becomes necessary to take measures for their control.

Abnormal increases in the number of these rabbits are checked best by hunting or, naturally, by diseases and predatory-animal enemies. When other repressive measures are necessary, poisoning may be resorted to. For the protection of trees, the trunks may be covered with washes that are distasteful or poisonous to rabbits, or with mechanical contrivances that prevent the teeth from penetrating the bark. The younger the tree the greater is the danger of rabbit injury. The Biological Survey frequently receives reports that rabbits have completely ruined a newly set orchard. Newly set orchards should be clean-cultivated if possible to eliminate the hiding places of rabbits, and trees should be protected, preferably with the wire-netting type of mechanical protector. No. 20 galvanized-wire poultry netting 18 inches wide of one-inch mesh will answer every requirement. This material is cut into one-foot lengths and fastened about the trunks of the trees. A lime-sulphur wash will also protect the tree against injury, but it has to be renewed several times during the winter. Cheap glue mixed with the lime and sulphur while the wash is still hot will make it more permanent. When the trees are three years old or older, another wash consisting of one-third creosote oil and two-thirds coal tar can be used. This wash should be painted in strips on the tree trunk. Avoid getting this wash on new bark or on trees under three years of age as it may injure or kill them.

Poisoning.—Only in exceptional cases is it advisable to poison rabbits in states where they are protected. The most favorable time to use it is in winter or after a long drought in summer has made green food scarce. The following method is adapted for general use:

Insert crystals of strychnine or powdered strychnine in pieces of apple or melon rind and place these baits at intervals along rabbit runs or paths. Where no well-defined runs are visible in orchards, artificial ones can be made with a narrow drag or scraper. The baits may be placed on the ground or elevated on short sticks along the path, and should be looked after with care. Keep the poisoned baits away from children and domestic animals. Destroy all baits left after the poisoning operations are over.

A High Grade of Honey and How to Produce It

By H. F. Wilson

IN LAST month's issue you were told about the use of hive bodies for brood rearing surplus honey. Education in the production of quality honey is much needed by many American beekeepers. An examination of the honey on the market in almost any town or city will show various colors and grades of honey, usually marked first-class honey, or, in other cases, perfectly fine honey marked ungraded. This procedure is extremely detrimental to fair prices, and does not provide an attractive product to sell.

In every beekeeping neighborhood there are from one to half a dozen beekeepers who usually secure better prices for their product than all the other beekeepers. A careful study of this condition will show that these men use care in producing their honey. They are careful in keeping honey flows from different plants separated and they put it up in attractive packages for the market. If you are in a section where there is a honey flow from more than one kind of plant, you should so arrange your work that the honey from separate and distinct blossoms can be removed from the hives and extracted separately. Of course, if two different types of plants are in bloom at the same time, this may not be possible.

Usually the honey secured in the early part of the season is lighter in color than that obtained later in the season. Light honey and dark honey should never be mixed, as the darker honey will only tend to lower the color values of lighter honey; it is therefore likely to reduce the sales value. In all those regions where clover honey only is produced, it may be left on the hives during the entire season, and it is better to do this, as a rule, because a finer grade of honey will result. If buckwheat or fall flowers bloom after clover, be sure to take the clover honey off before the others come into bloom.

The practice of extracting honey before the combs are completely sealed over in the early part of the season is a very poor one, and has, in past years, resulted in considerable losses to beekeepers and dissatisfaction among the consumers, because of fermented honey. Unless honey is well ripened, it can very easily ferment, and it is then not satisfactory as food. Allowing the honey to remain on the hives until it is thoroughly ripened will prevent this condition. If the honey is extracted, it should be warmed and strained through at least two thicknesses of white cheesecloth. To prevent the honey from rapid granulation, immediately place in cans or bottles while hot and seal at once. Canning honey while it is still hot is the only known way to prevent rapid granulation.

There is nothing more disagreeable to a customer than honey that is not entirely clear. Little flakes of wax and propolis in the honey indicate that proper care has not been taken in straining. Use only good glass jars for honey—it is a common practice for beekeepers to use Mason jars. This is not a desirable practice. Green Mason jars should never be used. Regular white flint jars, made purposely for marketing honey, will in the long run bring better results and better prices.

Preparation of Comb Honey for Market

The present market demand for comb honey is considerably greater than the supply. This is no reason why poor comb honey should be put on the market. Comb honey may be graded as extra fancy, fancy, No. 1, and No. 2. The grade "extra fancy" is supposed to be the very finest comb honey produced, and nothing less than a section with pure white cappings and completely sealed, except possibly at the corners, should ever be placed in this grade.

Grade "fancy" should be nearly the same, except that there may be a larger unfilled area. In grade No. 1 we usually find all the cells filled except possibly the outside row, and with a weight of 12 to 13 ounces to the section. Grade No. 2 may have the entire outside row of cells empty and differing only from No. 1 possibly in the weight of the section, the weight running as low as 11 ounces per section.

On the basis of these grades, prices should be established. It is detrimental to the business when our beekeepers offer fancy honey for No. 2 prices and try to get fancy prices for No. 2 comb honey. Regardless of what grade, the wood of the sections should be thoroughly cleaned of all propolis and stains. Dust and black specks in empty cells are not appetizing and may prevent sales.

Grade your comb honey carefully, see that it is thoroughly cleaned, then establish a sliding scale of prices, and there will be no difficulty in selling at a fair price every section of comb honey which we may produce.

Care of Containers and Labels

Before filling pails or jars with honey, they should be thoroughly cleaned so as to get rid of every particle of dust or dirt which might in any way cause specks in the honey. If any drops of honey fall on the top of the pail outside of the cover, wipe off carefully, as honey left on the pail will collect dust and make a bad appearance.

In putting on labels, see that the edges are even with the edges of the pail or glass jar, and use a damp cloth in applying the labels, so as to avoid touching them with the fingers, leaving finger prints.

Consideration of these little items make for a good product and neat packages. It also increases the confidence of the beekeeper in his product and makes it possible for him to always have a clear conscience in selling it.

Shenandoah Valley Apple Blossom Festival

THE SECOND Shenandoah Valley apple blossom festival, held at Winchester, April 23, was a success from every viewpoint. The big feature of the event was the parade of 5000 school children, ranging from kindergarten tots to high school pupils. The children of each school wore distinctive costumes of pink, green and white, symbolizing the apple blossoms. Bands, drum corps and other noise-making paraphernalia accompanied the different groups. The Maryland children wore costumes to represent the more important varieties grown in the district.

The parade was headed by the United States Navy Band, which was sent by order of President Coolidge through the influence of Senator C. A. Swanson of Virginia. The band consisted of 65 pieces and arrived during the night on a special train of Pullmans from Washington.

Spraying for Brown Rot in the Northwest

(*Continued from Page 25*)

prompt cooling, careful handling, and thorough sorting out of defective fruit at the time of packing.

Significance of the Results

While this article deals largely with the effects of orchard spraying on the keeping quality of the fruit, the writers would not minimize the importance of refrigeration and careful handling. Low temperatures may prevent unsprayed fruit from spoiling when even sprayed fruit would spoil at a higher temperature, and rough treatment of the fruit may almost completely outweigh the favorable effects of spraying—by encouraging the growth of blue mold and other rots.

The point we wish to emphasize, however, is that sound prunes and cherries as they come from the trees have an inherent variation in keeping quality that may be quite largely determined by the character of the spraying the orchard receives. If the fruit is to be held or shipped before canning, drying, or marketing, its size and general appearance are not the only things that should determine its value. Properly sprayed fruit has greater possibilities in the length of time which it can be held and in the points to which it can be distributed, and this should be recognized in the plans for marketing and in the price which is paid for the fruit.

Summer Meeting of Illinois Society

THE summer meeting of the Illinois State Horticultural Society will be held in Johnson County June 17 and 18. Prospects are excellent for a good crop of Yellow Transparent apples and peaches there. Johnson County is in the heart of the early apple and peach sections of extreme southern Illinois. Anyone interested in fruit growing will have an excellent opportunity at this meeting to see southern Illinois at its best. The early apples will be just about ready to pick. Large acreages of new orchards have been planted in the past few years and Johnson County promises to become the leading fruit county of southern Illinois. The Johnson County people are past masters in showing hospitality to visitors, and they are already making arrangements for meetings and tours for the visitors. Horticulturists from other states as well as Illinois are invited to attend.

The Blackberry Industry of the Northwest

(*Continued from Page 32*)

The Cumberland is a vigorous growing, productive berry of good quality, and it has about the same season as the Plum Farmer. It is one of the older varieties and as such is well known and popular. One makes no mistake in planting this variety for commercial purposes.

The Gregg is a very hardy, vigorous growing, late variety and is frequently used to lengthen the picking season, in combination with the other varieties mentioned. Unfortunately, it does not hold up well for commercial canning but is somewhat crumbly. For this reason its uses are chiefly confined to the fresh market and for drying purposes.

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Lower Prices

The following substantial reductions are announced in the prices of Graham Brothers Trucks, effective May 15th:

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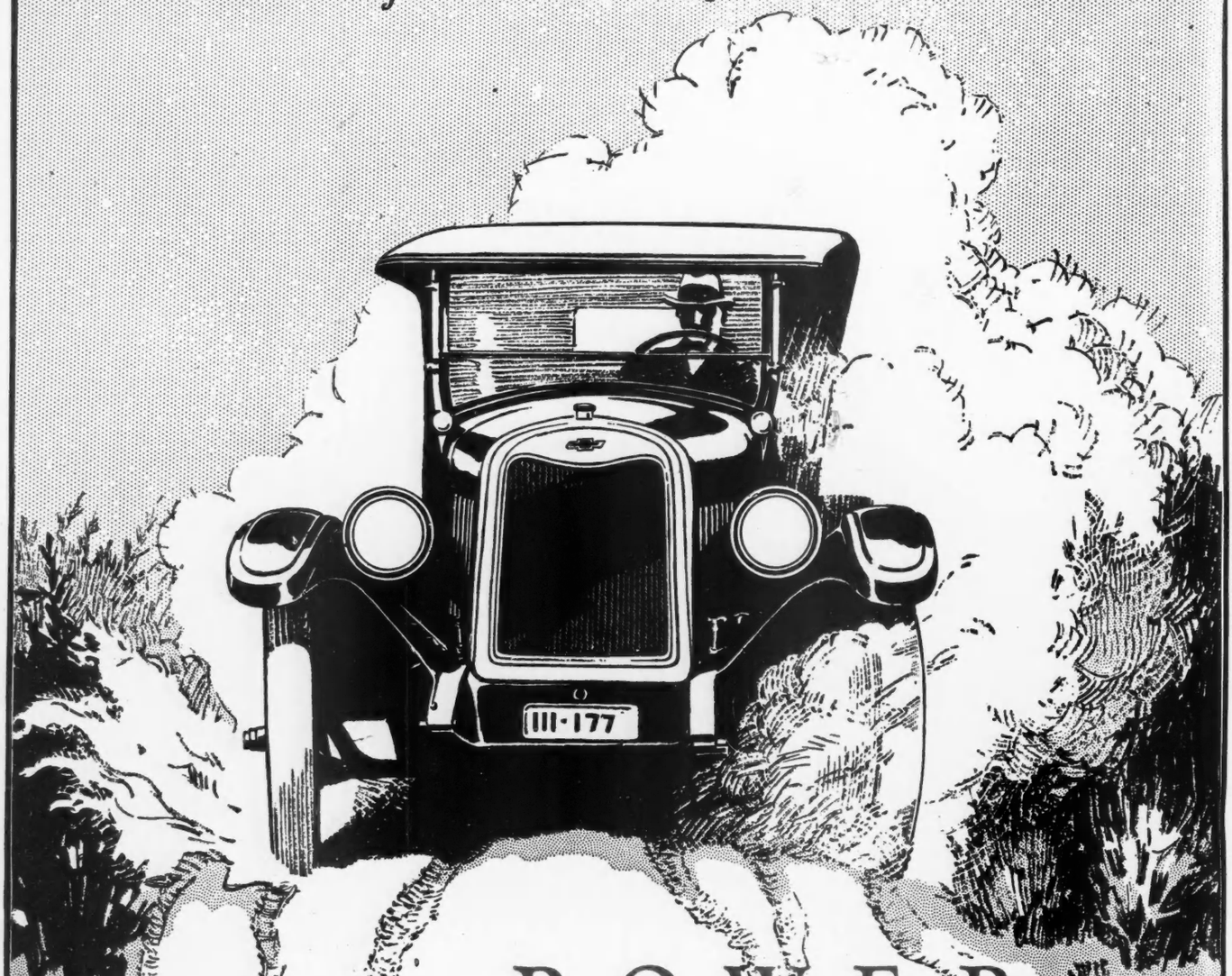

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